



INKA
HISTORY
IN
KNOTS

Reading Khipus as Primary Sources

GARY URTON

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I N K A
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JOE R. AND TERESA LOZANO LONG SERIES IN
LATIN AMERICAN AND LATINO ART AND CULTURE

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H I S T O R Y
I N
K N O T S

Reading Khipus as Primary Sources

GARY URTON

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IN MEMORIAM

R. Tom Zuidema (1927–2016)

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Contents

Preface *ix*

Acknowledgments *xiii*

Outline of the Book *xv*

PART I

BACKGROUND

1. What Can We Learn about the Inkas from Study of the Khipus? 3
2. A Brief Introduction to Tawantinsuyu—the Inka Empire 33

PART II

READING KHIPUS IN SOCIAL, POLITICAL, AND RELIGIOUS REGISTERS

3. Cord Notes for Describing an Inka-Era Village on the Southern Coast of Peru 53
4. The Ancestors' Calendar: Laguna de los Cóndores, Chachapoyas, Northern Peru 63
5. Constructing the Records of the Palace of Puruchuco, Lima Valley 85
6. Accounting for the Oracle: Record Keeping at Pachacamac, Lurín Valley 101
7. The Iconography of Inebriation: Engraved and Sculpted Khipu Bars 125

PART III

IMPERIAL ACCOUNTING

8. What Did the Ceque Khipus Look Like? 143
9. Accounting in the King's Storehouse: Inkawasi, Southern Coast of Peru 154
10. Counting Heads in Tawantinsuyu 179

PART IV

COLONIAL KHIPUS

- 11. Accounting for Demographic Collapse? 207
- 12. Khipus from a Colonial "Revisit" to the Santa Valley:
The "Rosetta Khipu"? 217

PART V

SUMMARY AND CONCLUSIONS

- 13. Structure and History in the Khipus 247

Appendix. A Khipu Inventory 261

Notes 265

References 277

Index 289

Preface

An Unexpected Career

Having spent the past twenty five years studying Inka *kipus*, I sometimes think about the day I first saw one of these marvelous objects. I was in the study at Dumbarton Oaks, in Washington, DC, and I cannot call to mind precisely what the occasion was, but someone had brought a fine *kipu* to a meeting and had set it up at one end of the room. I remember the sun slanting in through the window behind where it lay, a wan (wintery?) shaft of light falling on the cords and knots. I recall approaching the object, which was spread out on a board at a gentle incline, and being completely mesmerized and somewhat mystified. It was of a medium-brown spun and plied cotton. I know I was impressed by how tightly twisted the strings were and how solid and businesslike the knots appeared. It struck me that whoever had made this object certainly knew what he or she was doing.¹ I was particularly impressed by the knots; they were tied very tightly, with each knot in a group snugged up close to its neighbors. The ribs of what I now know as long knots were expertly made, with the turns of cord within the knots pulled tightly up against each other, as they coiled around the body of the string. What a fine piece of cord making and knot tying this was! Some individual had made this thing, and it struck me at the time that this was perhaps as close as I had ever come to engaging with the mind, body, and spirit of an Inka person.

I don't know why this *kipu* impressed me more than the sight of other Inka objects—textiles, pots, or metal objects—had done. I had seen many examples of these other, equally finely made objects, and I had admired them greatly, however, none affected me more than that

first *kipu*. Was I perhaps destined to study *kipus*? In fact, there was nothing inevitable to the path I have chosen; to the contrary, this particular career course is not only surprising but even contradicts a far earlier experience.

The confession I make now is one I have made to only a handful of people during the “*kipu* studies” phase of my academic career. When I was six or seven years old, growing up in Portales, New Mexico, I spent a year or so in the local chapter of the Cub Scouts. I enjoyed my time as a Cub Scout very much and learned many interesting things. I ended up, however, rather unceremoniously dropping out before I passed through all the stages required to attain the much sought-after rank of Eagle Scout, denied that achievement because I could not master a certain craft activity, tying knots. I dimly remember almost weeping from frustration while attempting to knot pieces of string, although those were not even terribly complex knots.

Having made this most embarrassing admission, I now make a second one, which is that I did not enter *kipu* studies—the examination of knots¹—from some conscious therapeutic or compensatory motive to expiate my earlier failure to tie knots. In fact, it was only after I had been working with *kipus* for more than a decade that one day, while deep in the bowels of a museum somewhere in Europe (in Berlin, I think), as I sat bent over a *kipu*, recording the numbers of cords and knots, I recalled that I was in fact, and quite ironically, focusing my life’s work on a task that had utterly defeated me during the early years of my childhood. This realization stunned me at the time, however, I must admit that I don’t really understand why my life’s work took the peculiarly “bent” (given my earlier reaction to knots) course it did any better today than when this realization first came to me more than a decade ago. Whatever the larger lesson may be, I would like to think that this particular tale suggests that the unexamined life is indeed worth living, for I have had a most rewarding and fulfilling career focusing on a task that was one of the sources of greatest frustration—second only to the more sustained and agonizing frustration of stuttering severely—during my youth.

This book is my attempt to sum up and reflect on what I have learned about Inka *kipus* and Inka record keeping over the past two and a half decades of research. If something should come of it in the end that throws light onto one individual’s curiously inappropriate preparation for such a study, so much the better, especially if the result takes the

form of demonstrating once again that one is better off facing one's fears and frustrations than avoiding them.

A Wider View on the Challenge of Studying Khipus

Having made these confessions, I ask, how can one justify spending a quarter of a century studying knots that were tied into strings by people of another, long dead civilization? What makes this a topic worthy of a life's study? To begin with, as far as we can tell, what these Inka "knot makers, organizers, and animators"—khipukamayusqs—were doing was a version of what I am doing as I type this text out on my computer;² that is, they were making signs, using strings, knots, and colors in a rule-bound way to store information in a manner akin to what we refer to as "writing"—that could be accessed by knowledgeable people able to retrieve it in a process similar to what we call "reading."

"Writing" and "reading" – innocent and familiar enough words. I believe, however, that we must immediately disabuse ourselves of the notion that these two common words now refer to anything like the mental operations the khipukamayusqs employed when they tied knots in khipus and interpreted the meanings of those colorful cords and knots in some manner of spoken performance. I make this claim about the semantic dissimilarities between how we think about writing and reading and what the Inkas thought about their version of these activities without being able to clearly state and precisely define exactly how the two technologies and the semantic values and performative practices attached to them differed. I believe, however, that they were very different, and one of the objectives of this study here is to chart some of the fundamental ways in which they did so and, more importantly, to describe the nature of the khipu side of this (non-)equation.

To return to personal history for a moment, I have often pondered whether one of the things that initially attracted me to the khipus was the fact that, as a (former) stutterer and someone who spent a large part of my youth and adolescence unable to communicate with ease (to the point of often just not speaking, so as not to stutter and thereby embarrass myself and others), I likened the as-yet-undeciphered knot records of the khipukamayusqs to someone who cannot communicate and is unable to speak—a severe stutterer. I knew from my own experience that although I could not speak with ease, I had a lot of thoughts in my head as well as some ordinary amount of knowledge, but I could not on

most occasions produce that information via speech; it was trapped inside me, waiting for when I might finally be able to speak clearly and smoothly. I finally overcame my stuttering. Perhaps my commitment to studying the *kipus* will help another person who cannot speak, at least not in a way that anyone living today can decipher or understand.

What do these ancient Andean masters of recording and communication, the *kh.pukamayuqs*, wish to tell us but can no longer say, because we have been unable to decipher their records? What do they have to tell us about their world? How can we unlock the actions, thoughts, and motivations—if not the words—of these extraordinary technicians of string recording? I propose that we allow the *kipu kamayuqs*' handiwork to speak for them—by studying the *kipus* as closely and in as much detail as possible. Rather than relying on what Spanish colonial observers had to say about what they saw and thought about what the *kipukamayuqs* were doing, we should privilege the string records themselves, following every cord's twists, turns, and color changes in the corpus of the some 923 *kipus* that I have inventoried to date around the world. The knot records constitute the only available primary sources not mediated by the hands, minds, and motives of the conquering Europeans. Close study of these records will be the principal method that I will pursue in this work. By the end, it is my hope, we will have found ways to facilitate communication with, and by means of, these extraordinary devices, the Inka *kipus*.

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Outline of the Book

This book is organized into five sections, each of which aims at exploring a different aspect of the many *kipu* studies I have carried out, either on my own or with colleagues,¹ over the past almost quarter century. This outline follows the series of section headings and the chapters found therein.

Part I: Background

The two chapters in part I provide basic introductory material as an aid to reading the main body of *kipu* studies presented in this work, which is the substance of parts II to IV. Chapter 1 surveys the key issues that researchers confront in the study and analysis of Inka *kipus* and what I see as the main questions to be addressed in pursuit of an understanding of the role of *kipus* in the consolidation and maintenance of state power in Tawantinsuyu. Chapter 2 provides a summary of the rise of the Inka state and the structure and organization of the empire just prior to its defeat at the hands of the Spanish invaders in 1532. This overview will give the reader an understanding of the governing institutions and structures of Tawantinsuyu, which, it is argued, constitute the principal structural and organizational forms that are incorporated in the *kipu* records.

Part II: Reading *Kipus* in Social, Political, and Religious Registers

The five chapters in this section focus on close readings and analyses of individual *kipus* or groups of *kipus* from different regions around Tawantinsuyu. The basic trajectory moves from local *kipu* accounts

to those employed for more general, regional level cord keeping. Chapter 3 concerns the analysis of what I argue was a census *kipu* detailing the inhabitants of a village in the region of Atarco, in the Nazca region, in Inka times. Chapter 4 analyzes several *kipus* from Laguna de los Cóndores (the Lake of the Condors), which is in the region of Chachapoyas, in northern Peru. The largest *kipu* at the center of this analysis seems to be a compilation of six lower-level, local *kipus* whose data were sent to a central cord keeper. Chapter 5 pertains to what I call an “accounting hierarchy” among seven *kipus* found in an archive in the grave of a (possible) *kipu*-keeper in Puruchuco, which is located on the south bank of the Rimac River, on the central Peruvian coast. Chapter 6 looks at the impressive collection of *kipus* recovered from the large regional ceremonial/pilgrimage site of Pachacamac, in the Lurín valley, just south of the Rimac River valley. Chapter 7 details several *kipus* that display sculpted figures on wooden bars to which *kipu* cords are attached. Most of these samples appear to pertain to the production and consumption of *chicha* (corn beer), probably in relation to state tributary work parties.

Part III: Imperial Accounting

The three chapters in this section focus on imperial-level accounting practices. Chapter 8 is a speculative construction of what I argue would have been the structure and organization of a pair of *kipus* that recorded the *ceque* system of Cuzco. Chapter 9 is a description and analysis of twenty-nine of thirty-four *kipu* samples recently excavated by Dr. Alejandro Chu at the Inka storage site of Inkawasi, which is in the Cañete valley, on the southern coast of Peru. This chapter analyzes many Inka state accounting practices that had not previously been encountered before the discovery of this *kipu* archive. Chapter 10 attempts a reconstruction of what imperial census *kipus* looked like and how they might have been organized. The methodology used is to compare early colonial census accounts with comparably structured information recorded on extant *kipu* accounts.

Part IV: Colonial *Kipus*

The two chapters in this section focus on *kipus* that pertain to colonial-era cord recording. Chapter 11 analyzes a segment of an extraordinary *kipu* from Laguna de los Cóndores in which, it is argued, is contained

a record of early colonial demographic collapse in the Chachapoyas region. Chapter 12 is an analysis of six *kipus* found in the Santa River valley that appear to constitute the cord record from a seventeenth-century *revisita* (a recount of the population preparatory to setting a new tribute obligation) of a village in the Santa River drainage consisting of six *ayllus* (social/kin groups). It is argued that this link between *kipus* and a colonial document may be a key for decipherment of the *kipus*.

Part V: Summary and Conclusions

Chapter 13 argues that what has emerged over the previous twelve chapters of the book provides basic material for writing an *Annales* style history of Tawantinsuyu. The *Annales* historical tradition, which was dominant primarily in French history writing of the mid- to late twentieth century, provides a highly appropriate form of history writing for the kinds of data recorded in the *kipus* discussed in this book—i.e., primarily statistical and quantitative records from Inka state administration. This may be the appropriate form of history writing to be pursued by students of the *kipu* records of Tawantinsuyu.

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*What Can We Learn about the
Inkas from Study of the Khipus?*

Four objectives have motivated the writing of this book. The first and most straightforward is to gather into a single book the results of the numerous khipu studies I have carried out over the past twenty five years. Some of this material has been published before, but by no means all of it. In all instances in which an earlier version of a particular analysis exists, it has been significantly revised for this publication.

Second, bringing all these studies together allows me to draw observations and conclusions in order to begin to write a history of Tawantinsuyu—the Inka Empire. For the first time, this is a study based on primary sources: the khipus. The history that will emerge from this work will not be the event based, “great man” history of traditional Western European historians. Readers should not expect to encounter khipu-based accounts of Manko Khapak, the first, quasi-mythical Inka king, or of Pachakuti Inka, often depicted as the “Alexander the Great” of the Andes, or of the struggle between Waskar and Atawalpa to succeed their father, Wayna Khapak, the last reigning king of Tawantinsuyu. Rather, what will emerge over the course of the volume will be the history of an era—the approximately 150 years of existence of the Inka Empire, which came to an end with the Spanish conquest. Rather than “great man” history, the story that will emerge here about the Inka Empire will be more in the style of mid-twentieth-century *Annales* histories. This is history in the tradition of Marc Bloch, Lucien Febvre, and Fernand Braudel—history that focuses on statistics, demography, and the great, *longue durée* social processes that characterize a civilization continuously adapting to and exploiting its environment.

I cannot state at the outset what the full contents of the history-to-

be-constructed in the course of this study will be. Such an assertion at this point would likely appear to be contrived, and readers could not be asked to accept it as coming from the cord accounts themselves. We must work our way through several chapters in which we will look in detail at how information was recorded in a number of different *kipus*, or archival groupings of *kipus*, and in relation to different recording and accounting procedures, contexts, and concerns. After pursuing these analyses, I will be able to give, in the conclusions, an overview of the types of historical events and processes of Inka history that will have slowly emerged over the course of the book.

There appear to be two major recording traditions represented in the approximately 923 *kipus* surviving from Inka times (see the *kipu* inventory in the appendix). One type is identified as quantitative/statistical accounts, and the other as “narrative” accounts. Statistical *kipus*’ knots record numerical information in the base-10 system of numeration used by Quechua/Inka accountants; these records probably also contain some nominative, identifying labels specifying the nature of the information recorded. While we are able to interpret Inka numerical/quantitative accounts, in only a few circumstances can we make confident guesses, or surmises, about the identifying labels attached to those numerical data. Narrative *kipus* are ones whose knots do not follow the decimal format, rather, they are formed and arrayed along strings in ways that are significantly – I would even say radically – different from the decimal based examples.¹ Such *kipus* may have recorded information about Manko Khapak, Pachakuti Inka, and the other great individuals of Inka history. We cannot read these narrative *kipus*. This book concerns the type of history that can be constructed from the quantitative/statistical accounts. As noted above, this will be history that echoes the historians of the *Annales* school, in vogue in the mid twentieth century. I plan to write another book, using material drawn from the narrative *kipus*.

The third objective is to reckon what I think we can say about the nature and complexity of the *kipu* record-keeping system. What stance should we adopt vis-à-vis judgments about *kipu* record keeping made by Spaniards at the time of the conquest of the Inka state? No matter how vast and complex this native South American empire may have been, since the Inkas lacked “true writing” – by which was meant writing based on an alphabetic script – the Spaniards judged them as “barbarians.” I claim, rather, that not only was *kipu* recording exceedingly

complex (and thus so were the makers and readers of the *kipus*, the *kipukamayus*) but it was based on fundamentally different recording principles and its aims were very different from those of the traditions and practices of European written works of the time.

Whereas European alphabetic writing was largely used to produce narratives, historical annals, and linear histories, *kipu* recording was primarily about “structures.” The latter were embodied in different configurations of semasiographic (“meaning sign”) sign units (e.g., paired, juxtaposed elements) that were constituted and reconstituted in different settings as the *kipukamayus* went about supervising state activities, carrying out and recording censuses, and assessing and assigning tribute in communities organized into *ayllus*, *moieties*, and other dual, triadic, and quadripartite forms of organization throughout the empire. Thus, I argue that while *kipu* recording was indeed concerned with “history,” in this case, *kipu* history took the form of structural history or, more accurately, the history of structures.

The fourth objective for writing this book is my hope of reorienting our conception of the place of *kipu* record keeping not only in the management but also in the development of the Inka state. In general, I think the important role of cord-based record keeping in the evolution of Andean societies before the time of the Spanish conquest has been overlooked. Cord-based record keeping was a critical technology in the evolution of political and economic complexity in pre-Columbian Andean societies. This process began with the pre Inka Wari of the Middle Horizon period (AD 600–1000)² and culminated in the emergence, around AD 1400, of the Inka state, *Tawantinsuyu* (“the four parts intimately bound together”) Whether we are talking about registering census data, recording tribute, or performing any of a great many other administrative tasks, the Inka *kipu*-keepers were key players in the organization and control of subject populations throughout *Tawantinsuyu* - and in this regard, *kipu* record keeping contributed in a significant and critical way to the emergence of political complexity in the Andes.

We will return repeatedly to these issues throughout this book. In the concluding chapter I will assess the degree to which I think the *kipu* studies covered here have informed our understanding of the “long duration” view of Inka history, as well as whether we have been able to demonstrate the complexity of *kipu* record keeping and the critical role it played in the emergence of the Inka state of *Tawantinsuyu*.

In his highly readable and stimulating book *Marvelous Possessions* (1991), Stephen Greenblatt presents a number of striking statements made by colonial Europeans concerning the significance (to themselves) of their own ability to write, particularly as they reflected on their skill in contrast to the numerous groups of unlettered peoples they encountered in the New World. Greenblatt, for instance, cites the views of the seventeenth-century writer Samuel Purchas³ on why, beyond their mutual endowment of speech—which (Purchas noted) placed both Europeans and natives of the New World above animals—literate Europeans were nonetheless blessed over and above Native Americans: “God hath added herein a further grace, that as Men by the former [i.e., speech] exceed Beasts, so hereby one man may excel another, and amongst Men, some are accounted Civill, and more both Sociable and Religious, by the Use of letters and Writing, which others wanting are esteemed Brutish, Savage, Barbarous.”⁴

There are many such examples from the earliest encounters of Europeans with New World peoples. What is it about writing and reading that supposedly confers superiority to those who possess these skills over those who do not? While certain authors maintained that the lack of writing was linked to the absence of rationality, that was not the critical issue for Purchas. Rather, he argued at some length that the possession of a system of writing gives those who possess this technology access to knowledge of the past, something that is not available to societies confined to oral communication. In short, for Purchas, the matter came down to the absence of resources normally deemed necessary for a knowledge and understanding of history. As he interpreted the matter: “By speech we utter our minds once, at the present, to the present, as present occasions move . . . us, but by writing Man seems immortal, conferreth and consulteth with the Patriarks, Prophets, Apostles, Fathers, Philosophers, Historians, and learns the wisdome of the Sages which have been in all times before him.”⁵

Although Purchas’s claim that the value of writing provides members of a society with access to its past certainly makes sense, bringing the matter to such a functional consideration (i.e., supplying a society with knowledge of its history) would not seem to provide a basis for piling a lot more significance on the matter. Specifically, the value of writing in providing documentation for an awareness of the past surely cannot stand as the basis for one group of people judging another group

as lacking, except in the most instrumental terms (i.e., “they don’t have historical documents”), certainly an existential judgment by one group of people of another would not seem to rest comfortably on such a rationale. However, from the earliest encounters between late medieval Europeans and the peoples of the New World, the absence of writing in the form privileged by alphabetic script was one of the major points on which these “other” worldly, New World peoples were judged inferior by Europeans.

Identifying the significance of the absence of writing in the absence of history was one of the central conclusions arrived at in a well-known study of the consequences of literacy – specifically, the advantages literate societies held over nonliterate ones – by a pair of modern scholars, Goody and Watt.⁶ I will return later to consider this question in relation to Inka record keeping; however, generally, I would say at this point that it cannot be denied that the presence of texts inscribed by one’s ancestors indeed constitutes a critical resource for knowing and reflecting on the past—at least the past as constructed in linear histories. Whether this capacity confers some degree of “superiority” on the people of a particular society that possesses such documents over another society that lacks them appears to assign a disproportionately high value to this one capacity in evaluating the lives, culture, and character of the family of humankind.⁷

As we turn to the colonial Andes, we should bear in mind the claims of another seventeenth century European, the Jesuit priest Bernabé Cobo, who spent most of his adult life in the Andes. He was a student of theology in Cuzco, the capital of the Inka Empire, from 1609 to 1613. Cobo knew many members of the former Inka elite, and he queried them personally and closely about Inka history. He also had access to a considerable number of documents produced by Spanish jurists, chroniclers, and other colonial administrators in Cuzco during the period from the late sixteenth through the early seventeenth centuries. In other words, Father Cobo was quite knowledgeable about the world of the early colonial descendants of the Inkas, and much of his commentary concerning the former inhabitants of Tawantinsuyu indicates that he had considerable respect for them. For instance, he repeatedly expresses his admiration for Inka modes of governance and their ability to see to the well-being of their subject populations. Sympathetic though he was to certain aspects of Inka civilization, Cobo nonetheless judged other features harshly, especially as he viewed Inka accomplishments in comparison to those of his homeland, Spain.

Why have I focused so heavily in the following pages on the writings of Bernabé Cobo, as opposed (or in addition) to other colonial authors? Writing in the mid-seventeenth century and with access to a wealth of earlier chronicles—both those favorable to the Inkas (especially those of Garcilaso de la Vega) and those that condemned the former Inka rulers (especially authors under the control or influence of the viceroy, Francisco de Toledo [1569–1581], who viewed the Inkas as tyrants)—Cobo occupied a particularly advantageous position with respect to the large body of sixteenth- and early seventeenth-century writings on Tawantinsuyu and on the nature of the Inka rulers.⁸ He was a remarkably astute and comprehensive synthesizer of these earlier works and has often been viewed as among the most reliable of the chroniclers of Inka society and culture.⁹ In addition, Cobo's works have been published in numerous Spanish editions, and they have been translated into English by a noted translator of colonial chronicles of Peru, Roland Hamilton.¹⁰ In short, I do not think my focus on Cobo in the following pages sets him up as a straw man in terms of his criticism of the Inkas and the consequences of the absence of writing in Inka society. Rather, his writings carry us to the heart of colonial intellectual and administrative evaluations and judgments of the issues that are of central concern to us.

Cobo focused on native Andeans' failure to invent a system of writing, although it is important to note that he was aware of the existence of the Inka recording device, the *quipu*. He would have read accounts of cord keeping from earlier documents and chronicles, and he probably would have witnessed such activities himself. Early in his chronicle, Cobo states:

Since the Indians had no writing, the information we find among them concerning their antiquities is very meager. Although it is true that the Peruvians used certain strings or cords to preserve a record of their deeds (as we shall see), nothing was kept on these records except what occurred from the time that the Inca Empire started its conquests and within the provinces that the Incas subdued during their rule.¹¹

This is a straightforward enough statement, one that echoes Purchas's appreciation of writing as a source of knowledge about the past. At first glance, we may be inclined to accept Cobo's views on the matter as generally positive. It is important to note, however, that although he speaks approvingly of the *quipus*, his interest in the cord accounts seems only to have been of a passing, superficial nature. Neither Cobo nor any other

Spaniard in Cuzco in the sixteenth and seventeenth centuries learned even the rudiments of cord keeping.¹²

The failure by colonial Spaniards to investigate *quipu* record keeping closely—such as by querying *quipukamayus* on how they recorded and read different types of information—is perplexing. How can we explain why Spaniards, who must have regularly come into contact with cord keepers in Cuzco and in communities throughout the Andes, did not display interest in and record their observations on these complex, “exotic” objects? Why did not at least one of these highly intelligent, linguistically curious men (e.g., Acosta, Betanzos, Holguín, etc.) not sit down with a *quipukamayus* and learn the intricacies of cord keeping, somewhat in the fashion of an anthropologist today, seeking to learn the ways of the “other” during fieldwork?

Yet no matter how intelligent and intellectually curious Cobo and other priests and travelers of his age (and earlier) were, it would be wrong to project onto sixteenth- and seventeenth-century Europeans the ethics and sensibilities of modern-day anthropologists. From the discovery of other peoples in the previously unknown half of the globe, beginning at the end of the fifteenth century, until the mid- to late nineteenth century, the sources for thinking about and evaluating the cultures and societies of other worldly peoples were the writings of medieval canon lawyers and theologians.¹³ By reference to such texts, I am pointing not only to the notions of divine history laid out in those works but also to the technologies responsible for the script (i.e., alphabetic writing) in which they were produced and their endurance in relatively unchanged form through time (i.e., printing). It was not until the middle of the nineteenth century that the discipline of anthropology, with its rigorous commitment to the dispassionate, nonjudgmental study of other societies and cultures, began to motivate and inform Western interactions with non-Western peoples.

The Spaniards’ unwillingness, or perhaps their plain indifference, regarding study of the *quipus* so that they could speak knowledgeably about cord recording methods and the contents of the *quipus* was a case of profound “alphabetic prejudice.” Europeans of the time believed not only that any form of non-alphabetic recording was inferior to writing in alphabetic script but also that close engagement with such a phenomenon would actually be threatening to the sensibilities of rational minds. They feared that if a person became engrossed in and influenced by the peculiarities of such a primitive, “pagan” device, this would disturb and disorient the civilized mind and the right order of things. One

gets the distinct impression from the disinclination of Europeans to pursue close study of the *kipu* that contact with such a “barbarous” invention was to be resolutely avoided.

As for Father Cobo, while it is clear that he was moderately interested in Inka cord keeping, what he knew (or thought he knew) about the contents of these documents was based on conversations with descendants of *kipukamayuchs* who lived in Cuzco at the time, as well as on transcriptions of *kipu* accounts that Spaniards had made during the middle-to-latter part of the sixteenth century, when numerous investigations of the Inka past took place in the former capital.¹⁴ Such testimony, elicited by Spanish jurists and other colonial officials and written down by scribes, was based on questions put to the *kipu*-keepers by their Spanish overlords. Under such conditions—conquerors interrogating the conquered—one can imagine that the cord keepers were not willing to speak openly about any information in their cord registers that was not specifically requested by their Spanish interrogators, nor would they see any benefit in extemporizing on the technicalities of cord-keeping practices. In short, there was clearly a disinclination on the part of early colonial individuals on both sides of the conqueror/conquered divide to delve into the fine points of Inka cord keeping.

What were Cobo's views on the nature of Andean peoples—on their character and what he would phrase as their general human qualities? His opinions express a profoundly negative judgment on the rationality and capacity for logical thought by the native peoples of Peru (he does not exclude any particular group of people in this comment): “As has been stated before, all of the Indians who are native to America are barbarians, for, like barbarians, they share a lack of orderliness, humanness, and respect for law, which distinguishes them from men who observe these practices and regulate their lives and customs by the laws of reason and justice.”¹⁵

Cobo distinguishes three different categories of Native American “barbarians.” He places at the highest level peoples such as the Inkas who lived in cities, who were orderly, and who maintained higher forms of political organization than the two, lower levels of “barbarians.” Nonetheless, Cobo, who is often given to painting with a broad brush (despite frequently making contrary statements elsewhere), wrote the following about the “true” nature of the native peoples of the Andes:

There is no one who is not surprised and frightened to see that these people's power of reason is so dull, this is not so much because they

are short on reasoning power, as some have alleged, as it is because of their very limited mental activity. On the one hand *this* is because they have no written literature, sciences, or *fine arts*, which generally cultivate, perfect, and make the mind quicker in its operations and reasoning powers . . . On the other hand, since the ingrained, savage vices to which they are commonly given have nearly become innate, these vices have dulled their ingenuity and obscured the light of their powers of reason.¹⁶

Cobo's views about the supposed lack of sciences and fine arts on the part of Andean peoples are easily contested. Much has been written about Inka astronomy¹⁷ and mathematics¹⁸ to show that these sciences were on a par with those of seventeenth-century Europe. And one has only to examine Inka weaving and works in metal (of which only little remains because the Spaniards melted most of it down into ingots)¹⁹ to reject Cobo's judgment on this point as well. What concerns us here, however, are Cobo's claims that: (a) these peoples experienced "limited mental activity," and (b) this state of affairs was due to the fact that they had "no written literature." I humbly offer this book as a riposte to Father Cobo.

While I don't want to be accused of tilting at a windmill, and certainly not one set so far in the past, I think it is important to address and respond to Cobo's views, which also exist in the published literature, and which therefore continue to cast a shadow over Inka achievements. This is particularly true in the Americas, where the Inkas have often been found wanting precisely because of their "failure" to invent a system of writing, especially when they are compared to the Mayas and Aztecs, both of whom had writing. It is indeed distressing to argue such matters today; however, the possession or lack of writing continues to occupy an important place in appraisals of ancient societies today, on the part not just of the general public but of scholars of writing as well.²⁰

The negative views of Cobo and other colonials on native Andean peoples' lack of writing and, in consequence, their (supposedly) low mental capacities were occasionally contested by other voices. Most notable of these was one highly knowledgeable mestizo (a person of mixed Quechua/Spanish ancestry) and a Jesuit of some notoriety.²¹ The individual in question, Blas Valera, was the offspring of a conquistador and a native woman of noble descent. Most of Valera's writings survive in Garcilaso de la Vega's *Royal Commentaries of the Incas* (1609), because Garcilaso used Valera's notes. Garcilaso, for instance, cites the following

views expressed by Valera on the usefulness of the *kipus*, the Spaniards' unwillingness to study them seriously, and the technical sophistication and mental acuity of his mother's people:

The keen ingenuity and wit of the Peruvians exceed those of many peoples of the Old World, for despite their ignorance of writing they achieved many things that the Egyptians, Greeks, and Chaldaeans failed to achieve, and it may be argued that if they had had letters as they had knots they would have surpassed the Romans, Gauls, and other peoples . . . We moreover are slower in understanding their books than they in following ours, for we have been dealing with them for more than seventy years without ever learning the theory and rules of their knots and accounts, whereas they have very soon picked up not only our writing but also our figures [i.e., numbers], which is a proof of their great skill.²²

Although Valera offers a view radically different from Cobo's on the mental capacities of the indigenous peoples of Peru, even he seems hesitant to lavish too much praise on the *kipu* recording system (e.g., "if they had had letters as they had knots") Thus, from the perspective of even a sympathetic witness, we are left without high expectations for the complexity of Inka cord keeping or its capacity to produce great achievements

How, then, should we examine the significance of the influence of *kipus* on the nature and complexity of Inka civilization? In this study, I plan to draw directly on evidence from the knotted cords themselves. Through close and detailed study of the *kipus* and the administrative work of the *kipukamayus*, I will show, first, that these peoples possessed considerably more than "limited mental activity," for it will become evident that the cord keepers were indeed subtle and complex thinkers, and second, that their complexity of thinking and reasoning is obvious in the *kipu* accounts we have studied to date. This is not precisely the same causal order in which Father Cobo claimed that native peoples had limited mental capacities. For, whereas Cobo claimed that Andean peoples had limited mental capacities because of the absence of writing, my point—as I do not have access to the minds of Inka peoples to query them on the matter—will be to show that the recording system the *kipu*-keepers manipulated is clear evidence of peoples who possessed excellent, if not extraordinary, mental facilities.

Did *kipu* recording technology constitute a system of "writing"? Much has been said on this matter.²³ I do not intend to answer this

question in the body of this study, although I will return to it in the concluding chapter. Rather, what I propose is to show how information was recorded on the *kipu* by knots, colors, and structure and give my views on what the general nature or substance of that information was (e.g., in terms of its references to Inka social, political, and economic structural principles and forms of organization). On the basis of this evidence, I will attempt to gauge what we can say about displaying, reading, and manipulating such communication units and structures over the long term and their effect on the emergence of complexity in Inka administrative practices, as well as their reflection of the mental capacities of the *kipukamayus*.

What kinds of information did *kipus* record? I will respond to this question throughout the book and on the basis of my own studies of Inka *kipus*. It may be helpful, for readers unfamiliar with the *kipu* recording system, for me to provide brief accounts of what has recently come to light about the types of information recorded on colonial and/or Republican era *kipus* and *kipu*-related devices.²⁴ This will give some indication of the range and types of information that may have been recorded on the earlier, ancestral Inka devices.

Cord-Based Signing Systems of the Colonial Era: What They Suggest about Inka Records

While most of this book is dedicated to the study of how information was encoded in Inka-period *kipus* and what those records, as they can be “deciphered,” consist of, it may be helpful to begin with a brief overview of some of the findings of innovative and highly creative research recently carried out on eighteenth- and nineteenth-century cord devices. This research has been undertaken in highland Peruvian communities by Sabine Hyland (2014), and by Hyland and her colleagues (Hyland et al. 2014). Despite the colonial pedigrees of the devices examined in Hyland’s research, I think the kinds of information contained in these more recent knot records, which concern principles of social and political organization attested from late pre-Hispanic to early colonial times (e.g., binary opposition, hierarchical dualism, etc.), suggest that the cord registries were critical resources for grounding and maintaining earlier, probably preconquest, community structures and organizational values through the profound disruptions of the colonial period.

It is essential, especially for nonspecialists, that I preface the overviews of Hyland et al.’s research with comments about how their find-

ings relate to an argument about *kipu* encoding that I published several years ago.²⁵ In that study, entitled *Signs of the Inka Khipu: Binary Coding in the Andean Knotted String Records*, I argued that there appeared to be a strong principle of binary organization of signing units at work in *kipu* coding. This involved the selection of one or the other of pairs of binary construction techniques or visual qualities of cords in such features as spinning and plying, attaching pendant strings to primary cords, knotting, color coding, and a few other features. On the basis of these observations, which derived from many years of systematic observations of *kipus* in museum collections in Latin America, Europe, and the United States, I argued that binary coding, or dualism (a type of binary organization), was critical to the encoding of data in the *kipus*.

Furthermore, as there was a significant difference in the occurrence of certain members of the binary pairs—e.g., S-plying was more common than Z-plying, and S-knotting was more common than Z knotting²⁶—I argued that the meanings assigned to the binary elements may have operated according to the principle of “markedness.”²⁷ According to markedness theory, elements of paired binary oppositions are understood to sort themselves into dominant items on one side (i.e., the “unmarked,” higher valued, or most common element) of the binary opposition, as opposed to the more unusual, singular, lower valued, uncommon items on the other side (i.e., the “marked,” or unusual, element). When I wrote my book in 2003, I did not have evidence with which to attempt “readings” of *kipus* based on their potential binary values. This is what Hyland and her colleagues have now accomplished, in the most spectacular fashion, in two articles published in 2014.

We do not have space here to provide all the details pertaining to the analyses presented in Hyland (2014) and Hyland et al. (2014). Therefore, I will note the essential arguments of the two articles and leave it to readers to study them more closely. As for Hyland 2014, I cite from the published abstract, which succinctly summarizes her findings:

Testimony from an Aymara-speaking *kipu* maker, collected in 1895 by Max Uhle and recovered [by Hyland] from Uhle’s unpublished field notes, combined with the analysis of his actual *kipu* [in the University Museum] provides the first direct evidence that ply was a signifying element in *kipus*. Moreover, the evidence suggests that ply signified through a principle of markedness in which S ply corresponded to the unmarked (more valued) category while Z ply corresponded to the marked (less valued) category.²⁸

In short, in Hyland's study, she found the consistent plying of cords in one or the other of the two alternative directions (S or Z) to signal marked and unmarked categories of objects in a *kipu* collected by Max Uhle, a German archaeologist who worked in the Andes in the late nineteenth and early twentieth centuries. In the second of the two studies, published by Hyland and colleagues (Gene A. Ware and Madison Clark), they discovered a similar binary organization of information linked with markedness; in this case, however, the findings pertained to a "*kipu board*," an object which is preserved in the Peruvian highland community of Mangas.

Khipu boards were introduced into the Andes by the Mercedarian order in the sixteenth century and were apparently fairly common in communities throughout the central Andean highlands until the late eighteenth or early nineteenth centuries. These were paddle-like wooden boards on which were written (in Spanish script) the names of tributary heads of households in the village. Holes were drilled next to each name and a *kipu*-like cord—which was spun, plied, often dyed bright colors, and usually knotted—was passed through the hole. Each *kipu* cord was manipulated (e.g., pushed in or pulled out) to indicate the status of the head of household with respect to such things as his attendance at religious ceremonies, participation in community work parties, and other religious observances and communal activities.²⁹

Hyland and her colleagues also carried out ethnographic research in Mangas and determined the moiety affiliations (i.e., Hanan = Upper Half; Hurin = Lower Half) of many common community patronyms. Many of these patronyms were also recorded on the *kipu board*. I quote again from the abstract of Hyland et al.:

We recently analyzed the names and associated *kipu* cords in a newly discovered hybrid *kipu*/alphabetic text from the Central Andes. Results indicate a significant relationship in the text between knot direction and a form of social organization known as moieties, in which S-knots correspond to the upper (Hanan) moiety and Z knots correspond to the lower ([H]Urnn) moiety. This relationship suggests that knot direction was used to indicate moiety in Andean *kipus*.³⁰

The important thing to note regarding the information recorded on the Aymara herder's *kipu* collected by Uhle and on the Mangas *kipu board* is that in neither case are Hyland or Hyland et al. arguing that the identities and categories indicated on the *kipus*—including

such specifications as cows milked daily/cows not milked daily; male/female; castrated/uncastrated; Hanan/Hurin, etc —were “written,” by which I mean that they were not inscribed in phonetically based signs, as in alphabetic writing. Rather, what Hyland and her colleagues argue³¹ is that the encoding was done using “semasiographic” sign units; that is, sign units that possessed non-language based *sema* (“meaning”) values. These sign units were formed primarily by binary coding configurations among different structural features of the *kipu*, primarily spinning/plying and knotting, but color as well. Such sign units were not linked to, nor did they signify, the sounds of a specific language. Rather, much as number signs or ciphers (1, 2, 3, . . .) are read by speakers of different languages in their respective languages, semasiographic signs are “read,” or articulated, by the speakers of any language who are knowledgeable about the meaning (rather than specific phonetic values) of the signs displayed. The absence of a grounding in phonetic, language-based sound values means, according to most definitions of writing,³² that such a signing system is not, strictly speaking, a “true” writing system. Rather, the signs studied by Hyland and her colleagues constituted one of a large class of proto-writing signing systems that have been described worldwide and that are usually referred to as semasiographic (“meaning marks/signs”).³³

Effects of Semasiographic Recording on Social Formations and on *Khipukamayuk Mentalité*

I argue in this book that many of the signs of the Inka *kipu* were, like those studied by Hyland et al., semasiographic. While I will examine this claim much more closely as I proceed, for now, the important questions concerning the semasiographic nature of *kipu* sign units are: first, given that the sign units were organized at least partially according to the principles of binary coding and markedness, what was the effect, or the contribution, of this kind of cord-recording technology on the emergence and formalization of social, political, and economic complexity in the early Inka state? And second, and decidedly more speculatively, what might have been the effects on the minds and the structures of knowledge of the *khipukamayuks* who manipulated and interacted with such signs over a lifetime of *kipu* recording and reading?

The first question is fairly straightforward. What relationship(s) can we identify between the structures of *kipus* and the structures of the

information they recorded? As we will see below, as well as in several chapters in this book, we can draw some fairly clear comparisons between the structures of these two entities, especially when *kipus* are compared to the principal social and political institutions of Tawantinsuyu. As for the second question, this lies at the heart of the issues provoked by Cobo's assertion that Andean people's "limited mental activity" reflected the fact that they had no written literature

To the best of my knowledge, we do not have scientific, linguistic, or any other kinds of studies that help us address these questions in a concrete, detailed way. In fact, we do not even have good studies on the mental effects of reading alphabetic scripts on mental processes, much less of engaging with a recording system as "exotic" as the *kipu*. Nonetheless, I think it is worthwhile to ask, given that the *kipukamayus* spent much of their time interacting with and manipulating semasiographic (rather than alphabetic) sign units, what would have been the effects of such activities on the cord keepers' intellectual apparatus, mental state of being, worldview, and general approach to making and interpreting meaning? Does reading an alphabetic script, such as Spanish, make one smarter and more mentally acute and agile than would "reading" the signs of a three-dimensional, semasiographic system of signs, such as the *kipu*? Apparently Cobo and many of his contemporaries thought so. This book challenges that view.

How should we proceed in addressing both of these questions? In the following chapters, I propose first to examine as closely as possible how the *kipu* records appear to be coded and structured and, on the basis of these observations, to attempt to assess what can be said both about the relationship between those structures and about the structures of social and political institutions in Tawantinsuyu. Second, I shall examine the possible influences on, or reflections of, the intellect—what historians of a certain stripe term *mentalité*—of a lifelong engagement with such semasiographic signs and structures on the part of the *kipukamayus*. My hope is that the combined results may reveal important clues of how to interpret, if not decipher (if such a grand desideratum should prove to be possible), the Inka *kipu*.

By mentioning the issue of *mentalité* and its relevance to *kipu* studies, I invoke Eric Hobsbawm's characterization of mentalities, which, he argues, is not the discovery that people are different in how they think but rather finding "a logical connection between various forms of behaviour, of thinking and feeling, to see them as being mutually consis-

tent.”³⁴ Why would a person, in a certain time, place, and class, feel a certain way, which might be so different from how another individual thinks and feels?

What I think we ought to do is to see mentality as a problem not of historical empathy or archaeology . . . but of the discovery of the internal logical cohesion of systems of thought and behaviour which fit in with the way in which people live in society in their particular class and in their particular situation of the class struggle.³⁵

In relation to this notion of the history of mentalities, the hypothesis I posit is that *kipu* recording and reading practices incorporated a set of structures that were understood and manipulated by the cord keepers. By “structures,” I mean configurations of signs that reflect the qualities and properties of such well-attested features of Andean/Inka sociopolitical and ritual organization as dualism, complementarity, triadism, and quadripartition, as well as the hierarchization of elements composing such structural configurations. I propose that these were part of the mental makeup — i.e., the ways of making meaning — of cord keepers in the empire, as well as constituting core properties of the institutions and practices about which the *kipu*-keepers were keeping records.

We know from numerous colonial accounts that such organizational structures were indeed present in the capital, Cuzco, as well as in provincial centers and villages throughout Tawantinsuyu. For instance, Garcilaso de la Vega states that:

The Incas made the same division throughout all of their kingdom that they had made in dividing Cuzco into *Hanan Cuzco* and *Hurin Cuzco* . . . [B]y means of this division a better account could be kept of the people that there were in each tribal group for the cases that might come up in which they would be needed, whether it be for war or peace, such as for public works, apportioning some tribute, and other things of this kind.³⁶

When Garcilaso refers to making “accounts” in the above context, it is clear that he is referring to information encoded in *kipus*. As we will see repeatedly in the following chapters, from the pairing and opposition of S- and Z knots to the pairing or copying of entire *kipus*, dualism was deeply embedded in the sign units and structures of the *kipu*. The daily construction, display, manipulation, and performance of these encoded structures by the *kipukamayus* continuously re-

instantiated those structures not only within Inka society, at the local, regional, and imperial levels, but also in the minds—i.e., the modes of thought and the constructions of meaning—of the *kipu* keepers themselves. This occurred in the context of regularized public performances of the narration of *kipus* by *kipukamayuks* as part of their administrative practices in ordering and regulating affairs of state. The sign units and the structures into which they were composed were the core elements in the performances of *kipu* contents enunciated by *kipukamayuks* as they visited villages, taking and performing censuses, recounting tribute obligations, or the like. These signs and structures, and their performances, constituted what we could term, after the French sociologist Michel Foucault, the “discourse,” or the “discursive formations,” in and through which society and its relations of power were continuously constituted and instantiated throughout Tawantinsuyu.³⁷

I further argue that the forms of social and cultural constructions enacted in *kipu* discourse were in fact quite different from the experience of the social and cultural structures that arose through engagements with written alphabetic texts in Western Europe at the time of the first encounters of Spaniards and Inkas in the mid-sixteenth century. In Western Europe, writing, while clearly grounded in the deep structures of languages, was primarily concerned with producing narrative contents constituting texts, whether historical, poetic, or other genres. The recorded annals and historical narratives of Europeans were linear and cumulative.³⁸ Such narratives, built up in the form of annals and compared over time, became the foundations of the event-based linear histories of early modern Europe. This was quite different from the recording and performance of social and historical structures by the *kipukamayuks*.

By analogy, we could say that European writing and Inka *kipu* keeping were as profoundly different as sixteenth-century European metallurgy was from Andean metalworking.³⁹ As Lechtman has argued, while European metallurgy was largely focused on producing instruments of war—for piercing, cutting, and slashing—Andean metallurgy aimed at bringing color out of the deep interior structures of metals and alloys. In the end, as the encounter of these two cultures came down to a contest of cutting rather than an appreciation of color, European metallurgy won and was adjudged to be “better.” For those familiar with the extraordinary complexity of Andean metallurgy, the historical judgment of the superiority of the European over the Andean metallurgical tradi-

tion leaves reason to ponder who and what historical circumstances go into historical judgments of the relative “value” and quality of Western versus non-Western technologies.

Should this same reflection not arise with respect to Western writing and Andean cord keeping? While Western alphanumeric writing decisively won out over the *kipu*—although the life history of the latter has, surprisingly, continued into the present day⁴⁰—I don’t think we must follow Cobo and his contemporaries in judging European writing “superior” to Andean knotting. It certainly was “different”, however, as we understand so little about how *kipu* recording and reading were accomplished, we should hold off on making comparative judgments of the relative complexity, specificity of referents, and modes of denotation and connotation of the *kipu* in comparison to Western alphanumeric writing.

In sum, whereas alphabetic writing was about narratives and, by extension, linear histories, *kipu* recording was primarily about “structures.” These were set up in the different configurations of sign units (e.g., paired, juxtaposed elements) that were constituted and reconstituted in different settings as the *kipukamayus* went about the business of state administration, carrying out censuses, recording tribute, and other duties. Thus, we might say that while *kipu* recording may have been about “history,” in this case it took the form of structural history or, more accurately, the history of structures. Our challenge here is to parse that historical record (of structures) by exploring its manifestations in the scattered extant Inka *kipus*. We will return to this point in the conclusions, where I will discuss the link between the history of structures represented in the *kipus* and Braudel’s observation that the *longue durée*—the conception of historical time as a continuity going into the deep past—is dominated by structure.⁴¹

Kipu Recording, Inka Administrative Practices, and the Evolution of Andean Complexity

The second principal concern of this book is the place of cord keeping and *kipu* administrative practice in the formation and evolution of Andean societies over time. For too long *kipus* have been relegated to a marginal role in considerations of the evolution of Andean societies from the Middle Horizon period (600–1000 CE) through the rise and expansion of Tawantinsuyu, in the Late Horizon (ca. 1450–1532 CE), to the Spanish conquest in 1532. I think the underappreciation of the role of

kipus reflects, in part, our view of these knotted-cord devices as products of a highly esoteric mathematical practice carried on by a small body of intellectual elites within Inka society. I think this view radically misunderstands and misrepresents the place of cord keeping in the Inka world and, therefore, that it misses the real, on-the-ground significance of khipu record keeping and of the khipukamayuqs themselves in the formation, development, and expansion of the Inka state.

I believe that the knotted-cord-toting Inka administrative officials were central players in the instantiation of state power and control throughout Tawantinsuyu. Although the highly vaunted Inka troops, whose numbers are regularly stated by the Spanish chroniclers to have numbered in the tens of thousands, were undoubtedly the blunt force of the power of the Inka state, nonetheless, the khipukamayuqs in the end exercised the greatest influence in formalizing and maintaining the power of the state. They did this by the seemingly most innocuous of tasks: categorizing, naming, counting, and recording statistics in knots and colors. Through these administrative tasks, carried out daily in places from the smallest settlements to the great administrative centers scattered along the Inka highway, from modern-day Ecuador down to central Chile, the khipukamayuqs methodically shaped and reshaped the world of the Inkas and their subjects.

But how could mere administrators, who were in many cases literally “bean counters,” exercise political power in an ancient state in which the forms of oversight and surveillance employed by today’s bureaucrats, with their enormous stores of digital electronic information, did not exist? How could a cadre of individuals knowledgeable only in knots, numbers, and colors have forged and maintained power over the strong, cunning and often rebellious farmers, herders, and artisans in villages throughout the empire? These are highly relevant questions. Indeed, a close reading of the Spanish chronicles suggests that wherever the Inka cord keepers were put to work outside Cuzco—from provincial administrative centers to small villages perched on the edge of a cliff—they operated without the backing of coercive power. What force bolstered the cord keepers’ routine administrative tasks, such as registering census data or recording the participation by villagers in the state tribute labor system, known as *mit’a*? In short, what manner of “force” did the khipu-keepers possess and deploy in the performance of their duties?

I suggest that khipukamayuq power took two basic forms. First, some of it must be credited to the mesmerizing force of a khipu-keeper’s performance of cord readings—that is, of his entering a community, prob-

ably accompanied by the local *kuraka* (native lord), unfurling his *kipu*, hanging it on vertical posts or spreading it on some flat surface, deftly picking through the cords, dramatically and publicly detailing the composition of the local community—the naming of the heads of households, their lineages, their *ayllu* affiliations—all as if by some magical act of memory or, more mysteriously, by deciphering the unfamiliar (to laypeople) code knotted on the colorful cords held in his hands. Lévi-Strauss's dramatic essay, "A Writing Lesson,"⁴² in which a Nambikwara chief in the Gran Chaco renders a beguiling performance of the reading of "writing" which he had himself produced on a slip of paper—a hoax which the chief enacted on his mates, in Lévi-Strauss's telling of it—seems a relevant analogy for how a *kipu* reading might have been perceived in back-country villages in Inka times. This is something of the power of the magician.

To the mesmerizing force of a *kipu*-keeper's performative readings, I think we must add the more subtle, coercive, and all-encompassing force which Foucault termed "discourse." This involved the enfold-ing of the local reality—its store of names, identities, and personal and family histories—into the (again drawing on Foucault) system of "power-knowledge" that constituted the state itself and was performed by the *kipu*-keepers. How did such a force emerge from the recording and reading of *kipus*? The social and political realities of any given village would, of course, have been well known to the villagers themselves. Their knowledge of that reality, however, was oral or, one might say, colloquial—it was everyday knowledge; that is, villagers knew this information as it constituted their everyday, lived reality. When that ordinary, local reality was "read off," recounted, or performed publicly by a *kipukamayuk* who was usually from outside the community and who represented the Inka state—not to mention the divine Inka himself—the accounting/recounting of the local roster of identities became something different altogether: it was possessed and controlled by the *kipukamayuk*, who held in his hands the official record of that local reality, of its registry of identities.

Khipukamayuks should be understood as active, creative agents of state governance. In fact, they served as catalysts of social formation: they actively created and legitimized the social formations that they recounted from their *kipus*. As the identities of local community members were recorded in the knots, colors, and cord structures of a *kipu* and were then recounted by the *kipukamayuk*, the village and

its inhabitants were brought formally under the control of the state. Recourses to such co-optation and appropriation could have taken the form of attacks on the cord keepers themselves and the destruction of their *kipus*, or some more passive form of resistance—such as simply not showing up to be named and counted by the state agents

Was the collection and recording of information about populations and identities on *kipus* tantamount to the appropriation of local communities by the state? Although some readers may view this claim as an overinterpretation, by making this argument I am highlighting a quality of accounting practice that has not, in my view, been sufficiently appreciated and taken account of in Andean studies to date: accounting represents one of the most effective and least costly means whereby a state can exercise its power and authority over subject populations. This kind of power, commonly termed “hegemonic,” is much less costly than coercive power, which depends on intimidation and force. Coercive power makes heavy demands on state resources and is more uncertain, in terms of its prospects for producing long-term peace and compliance with state values and plans, than obtaining the willful consent of the governed.⁴³

How can we understand the nature of the relationship between accounting and political power, not just in Tawantinsuyu but in other ancient and modern states as well? If the two were intimately linked, what models can we use for thinking and writing about the relationship between accounting and power? The most insightful and fruitful studies that I am aware of derive from a tradition of accounting studies referred to as “New Accounting.” These studies draw in highly creative and productive ways on the works of Foucault. After a minor digression to consider the nature of “accounting” in Tawantinsuyu, we shall wend our way back to the question of New Accounting.

Accounting, Power, and the “Archive”

What activities in Tawantinsuyu came under the heading of what we refer to in English as “accounting?” What terms were used for these activities in Quechua, the language of administration in the Inka Empire? In general, the root term in Quechua that concerns us here is *yupa*, which may be glossed as “count” and “account” although it also has the sense of the “value, merit, or price” of something. The nominal form of the root—*yupana*—is the term used for numbers; numbers are “count-

ing/accounting things." *Yupana* is also the name for the device that was used to perform the calculations that were recorded on the *kipu*

Yupanas were made of stone, ceramic, or wood. They were usually square or rectangular in shape and were often constructed on a pedestal base that stood several centimeters high. The internal space of the *yupana* was subdivided into numerous differently sized compartments, which were often situated at different levels, or heights. It is thought that the different sizes and heights of the internal units of the *yupanas* were keyed to different values (e.g., powers of ten) used in performing calculations. From general descriptions of calculations recorded in Spanish documents, it is clear that small stones, maize kernels, or other counter-like devices were shuffled around inside *yupanas* to make the calculations.⁴⁴

In various grammatical constructions, *yupay* (infinitive) refers not only to the acts of counting and accounting but also to "recounting," as in telling a story, or relating a series of events in narrative fashion, thereby explaining ("accounting for") the existence of some circumstance or state of affairs.⁴⁵

Accounting-related references in ethnohistorical documents clarify how counting and accounting practices were conceived of in the Inka Empire. Garcilaso de la Vega, who claims to have learned how to read and interpret the *kipu* accounts—at least those that pertained to the tribute records of the retainers of his mother's family⁴⁶—provides descriptions of the wide range of activities carried out in Tawantinsuyu that, for him, fell under the heading of "accounting" (Sp. *contaduría*):

They knew a great deal of arithmetic and had an admirable method of counting everything in the Inca's kingdom including all taxes and tributes, both paid and due, which they did with knots in strings of different colors. They added, subtracted, and multiplied with these knots, and ascertained the dues of each town by dividing grains of maize and pebbles so that their account was accurate. They had special accountants for all the affairs of peace and war, for the number of vassals, tributes, flocks, laws, ceremonies, and all else that had to be counted. These studied their special branch and its accounts, and could therefore easily provide the necessary information, since everything was recorded on threads and knots, which were like notebooks. Although one Indian, as chief accountant, was the overseer of two or three or more things, each subject was accounted for separately.⁴⁷

Later in his chronicle, when citing passages from Blas Valera concerning the recording and collection of tribute in the form of a *corvée*, or labor tax, Garcilaso notes.

At an appointed time the judges responsible for the collection [of tribute] and accountants or scribes who kept the knots and beads for reckoning the tribute assembled in the chief town of the province the calculations and divisions were made in the presence of the *curaca* [local headman] and the Inca governor by means of the knots on the strings and small stones, according to the number of householders in the province. The calculations were so exact that I hardly know whether to praise the more the accountants who made their reckonings without the use of figures and contrived to divide exactly very small quantities, a thing our mathematicians have great difficulty in doing, or the royal governor and officials who followed the process with perfect ease. . . . The Inca governor of each province was required by law to keep a copy of the accounts in his possession so that no deception could be practiced by either the Indian tribute payers or the official collectors.⁴⁸

Garcilaso's description should make clear why anyone engaged in the study of the *quipus* is probably destined to confront the nature of accounting. How are we to understand the range of activities and administrative procedures that fall under this heading within any particular society? Specifically, how was accounting understood by the Inkas and especially by the *quipukamayus* who were responsible for carrying out activities linked to counting, accounting, and recounting on behalf of the state? These questions raise some of the central issues that I faced at a certain moment, several years ago, in my study of the *quipus*. This state of affairs led me to an unexpected discovery the critical importance of accounting theory and history to the interpretation of Inka cord keeping.

A Serendipitous Encounter with "New Accounting"

Several years ago, at the beginning of a one-term sabbatical leave (2007–2008), I was considering how I might spend that time most productively, especially because, for various family reasons, an extended period of fieldwork was not feasible. As I considered where I then stood in my *quipu* research, I realized that an increasingly prominent feature of my interpretations concerned administration, accounting, and "bookkeep-

ing,” with the latter taking the peculiar Andean form of the absence of “books.” It struck me that I actually knew very little about the formal study of any one of these disciplines and their practices. Therefore, I spent much of my sabbatical reading about accounting and bookkeeping in the Harvard Business School library. The results stunned me and provoked a basic transformation in my understanding of the nature and significance of accounting (which, in my ignorance, I had pretty much disregarded), and of the profound relevance of this material for the study of the *quipus* and Inka administration.

What I found so transformative was the discovery of a body of accounting studies produced by a school, or perhaps better a tradition, of what can only be termed “postmodern accounting.” When I use this phrase in my lectures, it always draws surprised chuckles from the audience, for it seems that in the minds of a large part of the general public, there are not many concepts quite so humorous, nor possibly more oxymoronic, than the combination of these two identities! On the one hand, accounting is often thought of as among the most conservative of professions whose practitioners are staid buttoned-ups.⁴⁹ Accounting historians have typically worked endlessly around questions concerning the history of the invention of different accounting techniques, leaving aside issues concerning power and the surveillance procedures inherent to most accounting regimes. On the other hand, postmodernists are more akin to intellectual Molotov cocktail throwers, eager to look behind the traditional, staid concerns of whatever discipline they happen to occupy. So, how can these two radically different character types be combined within the same person – a historian concerned with accounting?

What is crucial and definitive for this tradition of accounting studies, which its practitioners refer to as “New Accounting”⁵⁰ is that while traditional accounting history has typically been concerned with the study of the invention and introduction into standard practice of certain bookkeeping and accounting techniques—most notably the double-entry system of bookkeeping—postmodernist New Accounting is concerned primarily with the relationship between accounting and power. This preoccupation emerges primarily in relation to the surveillance and control functions of accounting. Many practitioners of New Accounting have been particularly influenced by the writings of Foucault, whose works center around a few key concepts—e.g., “discourse,” “discursive formations,” “power-knowledge”—that have proved singularly powerful analytically in interrogating the role of accounting in society.

These concepts are useful to us here because they concern how the procedures and operations of accounting within different social formations affect the monitoring and regulating of individual and group action and behavior.

Many of Foucault's concerns, which are those most relevant for us in this study, crystallized under the heading of the "archive" as he articulated his views on this concept in *The Archaeology of Knowledge* (1969). Foucault used the term "archive" in relation to the concepts of "the general system of the formation and transformation of statements." Foucault focused not on the gathering and curating of any given set of documents in a central place (as we usually understand by the term "archive"), but rather on pointing to more expansive constructions—what he termed "discursive formations" in the form of discourse (by which he meant "statements," in the broadest sense possible), procedures (especially of the form seemingly innocently termed SOP—"standard operating procedures"), routines, regulations, examinations, and so forth that underlie and serve as the day-to-day processes responsible for the reproduction of institutions, including archival facilities but also, more broadly, whole societies. The "archive" of Foucault's early works was elided over time into the concept of "power-knowledge"—discursive formations linked to institutions of power characterized by widespread and pervasive systems of surveillance and control.⁵¹

It is interesting to note, in relation to the central place of the archive in Foucault's work, that the discovery of *quipu* "archives" was a subject of considerable interest on the part of Spanish commentators in the years following the conquest of Tawantinsuyu. For instance, writing in 1555, Agustín de Zárate states that

they [the Inkas] had in each province people, called *quippo camaio*s [khipukamayus], who were responsible for keeping the general memory of things by means of these cords; and thus, they had public houses [casas públicas] full of these cords, for which he who was responsible had great facility for understanding [them], although they [i.e., the accounts] might have come down from long before he lived.⁵²

In a statement from near the end of the sixteenth century, the chronicler Martín de Murúa notes that "the accountants had great heaps of these cords, in the manner of registries, like our scribes have their written documents, and they kept their archives in such a manner that if they needed to know something, they had only to go to one of the *Quipucamayos*."⁵³ The interesting thing about both of these commentaries

is that, since the ability to read *kipu* accounts seems not to have been universal, but was confined to the *kh.pukamayuqs* themselves, whatever information on the past dispensed by the cord keepers was their own construction—that is, it was the “truth” of the past as these men understood it, and as its recounting served to maintain the status quo.

While archival formations may be recognized narrowly (and more prosaically) in collections of documents sitting seemingly neutrally in unobtrusive marginal spaces (e.g., Zárate’s “public houses”), the term may also be understood in the broader sense employed by Foucault, which embraces the varied, dispersed, and intersecting realms of terminology, practices, talk/discourse, and so on, all interacting in webs of meaning constituting diverse forms of political power, regimes of governance, and social formations.⁵⁴ This is the sense in which I use the term “archive,” and the related practices of “accounting.” This is consistent with what I have portrayed in the previous section as the appropriation of communities and whole populations by the state as information detailing their identities forms of organization (e.g., *ayllus*), governance structures, and other such matters were encoded into, and later recited from, *kipu* accounts.

As I will detail later, we have identified to date thirteen moderately well attested archives in the former territory of Tawantinsuyu.⁵⁵ These archives pertain to a total of some 250 *kipus* out of a total corpus of some 923 extant *kipus*. The existence of discernible *kipu* archives suggests that it might be useful to consider how archives are constituted and reflect on what such collections might represent in providing insights into the relationship among accounting, power, and governance across Tawantinsuyu. I explore the properties and character of several of these archives—especially those in Chachapoyas, the Santa valley, Puruchuco, Pachacamac, and Inkawasi—throughout this book.

Although I have presented my two central motives for writing this book—i.e., the effect of continuous practices of cord keeping on the mental apparatus of cord keepers, on one hand, and the place of cord keeping in the evolution of sociopolitical complexity in the Andes, on the other hand—as separate concerns, in fact, the two come together at a higher, more inclusive level of analysis. At this level, my two concerns are recognized as the two sides of the same coin. I would define that “coin” as the total makeup of (a) structured arrangements of numbered sets of items, institutions, and practices of governance, (b) relations of power (in its many forms), (c) discursive practices (e.g., as realized in the performance of *kipu* recording and readings), and (d) the materiality of

the complexly coded cord records that constituted *quipu* accounting in the emerging state of Tawantinsuyu. This bundle of elements and the forces that united them into what might be termed a generative (i.e., in the sense of giving rise to particular mental and sociopolitical formations) discursive formation, are what we will investigate and seek to understand in this work.

Action at a Distance in the Inka Empire

How, from their court in Cuzco in the southern highlands of what is today Peru, were the Inkas able to exercise power in distant settings, from Ecuador in the north to central Chile in the south? I suggest that the key to this is a combination of (a) a complex and precise system of registering numbers that could be conveyed over great distances, (b) a powerful and highly efficient set of accounting procedures and practices the terms of which were shared among *quipu*-keepers throughout the empire, and (c) the training and deployment to provincial accounting centers of a highly knowledgeable cadre of record keepers, the *quipukamayuks*, who produced and oversaw *quipu* archives across the empire.

This question of action and control at a distance concerns the nature of the exercise of power in the Inka state. In discussing *quipu* archives found in administrative centers or state facilities (such as those set up for agricultural production or storage), it is important to note that these centers probably were manned, defended, and overseen by some numbers of Inka troops. In such settings, Inka state "power," in its coercive form, would have been evident and operative. However, soldiers armed with axes, slings, and other weapons are usually not well suited to the monotonous, daily tasks of monitoring and regulating accounting for goods moving into and out of a storage facility. Military forces may stand behind, sanction, and (broadly) oversee the work of "bean-counting," but they are usually not themselves designated to pass their time counting and recording beans. In Tawantinsuyu, this was the work of the *quipukamayuks*, who operated in hierarchically organized cadres and who were ultimately responsible for confirming the accuracy of local accounts with higher-level accountants in distant provincial administrative centers and, ultimately, with the head accountants of the empire, in Cuzco. What do such circumstances and imperatives imply about the probable features of the *quipus* themselves?

In a wide-ranging and stimulating study entitled "Accounting Num-

bers as 'Inscription': Action at a Distance and the Development of Accounting" (1992), Keith Robson has argued that accounting records that emerge in circumstances like those described above in the Andes (although his own examples are taken largely from the cuneiform tablets of ancient Mesopotamia) must meet a limited set of specific criteria in order to be effective at distances and over the long term. The qualities that Robson argues are essential to the effectiveness of such inscriptions are that they must be *mobile, stable, and combinable*.

By *mobility* Robson means that accounting inscriptions are required to move from the actor, in the accounting context, to a distant place where the accounts are inspected, and (often) back again. Robson cites Goody's observation on the importance of mobility in relation to the requirement of comparing different documents from different times and places. "The presence of documents enables one to lay side by side different accounts emanating from different times and different places, and so perceive contradictions."⁵⁶ In the *kipu* corpus, numerous such examples occur, especially in the form of paired and linked (i.e., tied together) cord accounts.

As for *stability*, Robson means, at the most basic level, that such inscriptions must resist decay and corruption. This criterion is fairly well met with our *kipu* archives, given the excellent conditions for preservation of organic matter on the dry coastal desert of southern Peru and northern Chile, where these devices have largely been found. But more interestingly, Robson also argues for the importance of stability in terms of the inscriptions and accounts being recognizable, or legible, to their users; that is, there must be a stable relation between the inscriptions and the contexts to which they refer. Said another way, there must be internal conventions by which the accounts are understood to communicate and to have meaning. This would involve stable conventions of grammar and syntax by which the accounts are recorded and interpreted, as well as mathematical conventions (e.g., factors, ratios, proportions) that are applied to or that may be carried out on arrays of quantitative values within the accounts.

We should take special note of a particularly interesting and relevant example of the principle of inscriptional stability in the form of an arithmetical manipulation, or a syntactical feature of inscriptions, which Robson refers to as "horizontal equivalences"

The reduction of numerical relations to algebraic formulae, i.e., variable numbers, produces inscriptions which exhibit the principle of

“reversibility.” By this I mean that *formulae allow arbitrary transformations that can be carried out to both sides of the equation without upsetting the equality*. . . Numerical equations create stable, reversible relations and allow transformations and combinations not easily achievable in ordinary speech ⁵⁷

Several *kipu* accounts—from Laguna de los Cóndores to Puruchuco to Inkawasi—contain arithmetical paradigms and algebraic formulas that display the kind of “horizontal equivalence” structure described by Robson. Such reciprocal, equivalence structures in *kipu* accounting represent another expression of dualism—the *kipukamayuc* of one moiety using one arithmetic paradigm, while that of the other moiety uses another.

Finally, the third quality of inscriptions that allows them to perform the work of control at a distance is *combinability*. This feature “allows the actor to accumulate inscriptions, aggregate them, tabulate them, recombine them in order to establish new relationships, and calculate ‘norms’ through which to compare the settings to be influenced in accordance with his or her specific objectives, aims, or ideals.”⁵⁸

Certain *kipus* in this study are combined in ways that appear to constitute standardized, “traditional” features of archival organization in Andean cord keeping. Such archival practices include the linking of two or more cord sets, by actually tying them together, usually by knotting their primary cords together. Beyond this and other particular archival techniques of the manipulation of cord accounts, what is particularly relevant to take note of in terms of Robson’s commentary on the combinability of inscriptions is that the resulting inspection and comparison of accounts often leads to the practice—what we could call a culture—of internal surveillance.

The continuous surveillance created by the accounts has the potential to create *auto-regulatory* effects: the individualising power of accounting inscriptions are such that one can be subject to control not only from “without,” but the inscriptions that measure and survey the individual have also the potential for creating an internal form of control. Accounting inscriptions serve to construct and discipline the individual in what it is he or she knows about him or her self.⁵⁹

With this feature of accounting inscriptions, we arrive at an aspect of Inka accounting alluded to earlier, and one which is a core concern of the New Accounting literature—the importance of surveillance and

control, at both the individual and the institutional levels, as features of the culture and practice of accounting. The evidence of the various *kipu* archives shows that these relatively standardized, global features of accounting were highly developed in the cord-keeping practices of Tawantinsuyu.

A Brief Introduction to Tawantinsuyu— the Inka Empire

Before we enter the world of *kipus* and of Inka recording and accounting practices, it may be useful to some readers who are not deeply familiar with the rise, organization, and expansion of the Inka state—known as Tawantinsuyu—to review the basic characteristics of this extraordinary American empire. It might seem contradictory to what I have claimed about the nature of this “history”—i.e., that I will focus on the examination of primary sources (the *kipus*) instead of Spanish colonial documents—to introduce this study precisely with a historical overview relying largely on Spanish sources. However, this will include comments on aspects of Inka history that are particularly well documented in the *kipu* accounts, this may also provide a helpful orientation to non-specialists for understanding in general terms the historical and cultural contexts of the following chapters.

Rather than presenting a complete, exhaustive account of the Inka state and its many institutions and practices,¹ I will provide a general framework of the major institutions, structures and practices of Inka state governance against which we may view the structural properties of the *kipu* registries. As I stated in chapter 1, I think that the *kipus* essentially encoded structures—political, social, ritual, economic—and that our task here will be to relate the structures identified in *kipus* with those that were central to Inka governance

Sources for the Study of a Nonliterate Civilization

Unlike all the other pristine states of the ancient world (i.e., Mesopotamia, Egypt, China, and the Maya of Mesoamerica), the Inkas did not invent a system of writing—at least not one in the form of a graphic

script. They did, of course, develop the *quipu*, the object of study in this book. I remind readers, however, that while we know how to read and interpret the numerical/quantitative data recorded on the *quipus*, most of the information pertaining to names, identities, and other nominative and qualitative value labels registered on these devices remains opaque to us today. Therefore, unlike researchers investigating any of the other major civilizations, who can read what those peoples said about themselves and their past in their own words, scholars of the Inkas cannot draw on firsthand accounts, rather, they are forced to rely primarily on two other sources of information: archaeology and accounts of the Inka state and its history written by Spaniards following their invasion of Tawantinsuyu, beginning in 1532. These two sources of information offer positive features as well as some significant problems.

Although the archaeological record (the built environment, such as the remains of houses, bridges, and roads; and material remains, such as ceramics, metal works, and textiles) bears witness to Inka activities and achievements, archaeological artifacts do not “speak for themselves.” Rather, artifacts must be interpreted, and analysis of the archaeological record is fraught with uncertainty and ambiguity. What is the absolute age of an object? Why was it produced, how was it used, and when and why was it discarded? These questions and many others open up the archaeological study of the past to considerable uncertainty, due to differing viewpoints on and interpretations of the material.

The questions posed above are relevant for our study of the extant *quipus*. Most such items in museum collections today arrived there many decades ago, often coming from the illicit excavation of gravesites, especially along the coasts of Peru and northern Chile. Many then entered the illegal antiquities market, where in years past they might have been bought by museums; in some cases they might have been purchased by private individuals and donated to those institutions. There is only a handful of instances of scientific excavation of *quipus* (at Inkawasi and at Puruchuco, see below). Concerning the dating of “Inka” *quipus*, because so few were retrieved from controlled, scientific excavations, scholars have very little contextual information on which to attempt to establish relative dates for them. I have sent some fifteen to twenty *quipu* samples to be dated at various accelerator mass spectroscopy facilities.² However, because of instabilities in the calibration curve (and the resulting difficulty in matching the C^{14} values with calendar dates), all C^{14} readings yield large plus-or-minus calendrical calibration values. Dates for the *quipus* range generally from around

1450 to 1650 CE—in other words, from a century before to a century after the Spanish conquest. It is not yet scientifically possible to attain “absolute” dates for the khipus.

The documents and chronicles about the Inkas and their past that were written by Spaniards in the years following the conquest often have the ring of authority. This is especially the case when written accounts have resulted from testimony provided by khipu-keepers that was transcribed into Spanish texts by scribes. The recording of such testimony was particularly common in the early years following the conquest, as Spaniards sought to establish a colonial state as well as to write the “true” history of the Inka Empire.³ Caution, however, must always be exercised when reading such accounts, because, first, such accounts were usually based on the testimony of informants concerning events from before the time of the conquest, and we can never be certain whether such testimony was skewed by the events, forces, and consequences of the conquest itself. And second, not only might native Andean informants have given unreliable testimony, but the Spanish authors of such documents might have had reasons, arising from their own interests and motives, to skew accounts. The Spanish chronicles and documents must always be read critically and with a considerable amount of skepticism. In fact, it is precisely my desire to avoid Spanish-centered accounts of Inka civilization and history that has led to this effort to write about the Inkas based on the only “primary sources” available to us—the khipus.

Who Were the Inkas, and How Did They Come to Power?

The territorial boundaries of the Inka Empire at its height extended almost five thousand kilometers (three thousand miles), from just north of the present-day border between Colombia and Ecuador, southward along the spine of the Andes through Peru, Bolivia, and northwest Argentina, and down to the Maule River, about one hundred kilometers south of Santiago, Chile. The desert coastal plains along the Pacific Ocean formed the western boundary of the empire, while to the east the frontier generally followed the rain-drenched Andean foothills that formed the upper watersheds of the Amazon River (in the northern half of the empire) and the Paraná River (in the southern half), between the western and eastern boundaries, the Andes mountains rise to great heights (up to 22,000 feet) in either two or three great mountain chains, or corridors. Within this vast and ecologically highly diverse ter-

ntory, the Inkas built their empire, exercising an unstable, contested suzerainty over myriad ethnic groups speaking a host of different languages and dialects.

Spanish accounts of what the Inkas said about their own origins claim that the Inkas' ancestors were brought into being by a creator-deity, Viracocha, on the shores of Lake Titicaca, which straddles the border between present-day Peru and Bolivia.⁴ From there the ancestors traveled underground northward from Lake Titicaca and reemerged following the path of the sun and thus establishing their divine connection to Inti, the Sun—from inside a cave at a place called Pacariqtambo. From Pacariqtambo, the ancestors trekked northward to a nearby valley, where they founded the city of Cuzco, which would become their capital. The ancestor-king, Manko Khapak, founded a dynasty of some eleven kings (the number varies in different accounts), who ruled in succession from the founding of Cuzco until the coming of the Spaniards.⁵

The history of the first eight Inka kings is lost in the mists of time. It is with the ninth king, Pachakuti, that some Inka specialists believe we enter discernible historical time. Pachakuti is characterized in the chronicles as an Andean version of Alexander the Great, expanding the boundaries of what would become the imperial domain far beyond the valley of Cuzco. Pachakuti was credited with founding many of the institutions of governance from his time (perhaps around the 1470s) forward. Subsequent kings further expanded the imperial boundaries north and south along the spine of the Andes, until the empire reached its greatest extent. This coincided with the arrival in 1532 of the Spanish invaders under Francisco Pizarro, who found Tawantinsuyu embroiled in a war of succession between two brothers, Waskar and Atawalpa. In less than a year, Atawalpa had killed Waskar, Pizarro had executed Atawalpa, and the Inka Empire had begun its rapid and inexorable collapse.

Archaeology tells a different, less fluid, and more complicated story about the rise and expansion of the Inka Empire.⁶ This story begins before the appearance of what later became the identifiable markers of Inka material culture in Cuzco, including fine ceramics in a variety of standardized forms decorated with geometric designs, settlements built around large plazas flanked by low platforms with a hole for ceremonial offerings to the earth (*ushnus*), and architecture of the finest stone masonry, often displaying trapezoidal windows, niches, and doorways. In pre-Inka times, the Cuzco valley was occupied by colonists, administrators, and possibly militia from a complex, probably state-level society, known as Wari, from the region of Ayacucho, to the west of Cuzco.

The Wari exploited the Cuzco valley and neighboring regions for a variety of purposes, not all of which are entirely clear. They probably set up some of the institutions—such as tribute from subordinate peoples in the form of *corvée* labor; the production and offering of luxury goods as a mode of forming alliances, and other practices—in the Cuzco valley that would be adopted by the immediate ancestors of the Inkas.⁷

As I have discussed elsewhere, it appears to have been the Wari who invented, or perhaps adapted from an earlier source, the first clearly discernible tradition of cord keeping in the Andes.⁸ I believe that early Inka administrators took over a Late Intermediate period (1000–1475 CE) tradition of cord keeping, perhaps maintained by descendants of Wari cord keepers occupying the Cuzco region, transforming the technology in ways that accommodated Inka record-keeping interests (e.g., shifting the system from base 5 to base 10).⁹

The early Inkas seem to have descended from local inhabitants, possibly connected to only a few ethnic groups (e.g., the Pinahua and Ayar maca) who produced distinctive and identifiable cultural remains, most notably ceramics of a type known as “Killke.” Scholars believe that the Killke culture evolved over time into early Inka culture, perhaps with an admixture of influences from interactions with other ethnic groups in the Cuzco region. By the early fifteenth century CE, the peoples of the Cuzco valley had achieved a degree of political, economic, and ritual evolution and complexity sufficient to allow us to identify the remains as nascent Inka.¹⁰ These early Inkas initiated a course of rapid expansion, either conquering or forming alliances with peoples ever farther from the Inka heartland, until, with the conquest of other existing regional chiefdoms and states, the Inka polity took on the dimensions, complexity, and institutions of an empire. This was the entity that came to be described, in the Spanish chronicles written in the first half-century following the Spanish invasion, as Tawantinsuyu.¹¹

How Did the Inkas Establish and Maintain Control over Subject Peoples?

States and empires, whether ancient or modern, generally exercise power in one or the other (or both) of two ways. One option is the use of force; that is, by establishing police and military units in numbers sufficient not only to conquer opponents but also to establish control over subject populations and to maintain the peace. This is a very expensive and costly form of power, requiring extensive surveillance and a highly efficient system of deploying forces around the land. While the

Inkas certainly had the infrastructure to move forces throughout the empire, especially with the convenience of their famous road system, it is clear from the revolts and outright rebellions that plagued the Inkas up until the time of the Spanish conquest that state control was tenuous in many parts of the empire.

The second form of state power depends on the cooperation of the governed with state institutions. In order to achieve this kind of cooperation from the governed in an arrangement known as “hegemony”—the state institutes policies that accord closely (or, at least, that are perceived by the governed to do so) with “traditional,” local values, norms, and practices. In hegemonic rule, the state designs administrative units and procedures in such a way as to garner a high level of conformity by local populations with state plans and expectations. Hegemonic power aims at achieving the legitimacy of rule by virtue of cooperation rather than by force. It appears from archaeology and the colonial written record that the Inkas made use of both force and cooperation in their expansion throughout the four quarters of their known world, although they clearly preferred the latter mode of rule and governance over the former.

The Inka use of force is clear in the archaeological and historical records. The Inkas built military installations at strategic sites around the empire from which they could conquer and oversee potentially rebellious populations.¹² While the arsenal of Inka weapons, comprising slings, clubs, and lances, was not extensive by fifteenth and sixteenth century European standards, it appears to have been adequate to subdue even the most recalcitrant of Andean opponents. It was not until the Inkas faced the Spanish conquistadors, with their steel swords and guns, that their weapons proved inadequate.¹³

Beyond acts of conquest and the waging of war against resistant and rebellious populations, the Inkas have long been recognized for their highly efficient system of administration. As I stated in chapter 1, it was this administration, built around a number of highly effective institutions, which appears to have had the greatest influence in the establishment and maintenance of Inka power around the empire. Critical to so many state institutions, especially the establishment of tribute (i.e., *corvée* labor), was the performance of regular census taking throughout the empire.¹⁴ Sources describe how the population was divided into age grades—ten for men and ten for women—and that the censuses would track changing numbers of people in the countryside about every five years.¹⁵ Census information was stored in *kipus* and was reviewed and

revised from one census event to the next (see chapter 10). Colonial officials often drew on the information in the censuses in order to gain an understanding of the organization of populations, including tribute levels, throughout the empire.

Principal among Inka institutions and practices of governance were those built on the principles of dualism, hierarchy, and reciprocity, as well as ancestor worship, reverence for the divinity of the Inka lineage, and recognition of and respect for local kin groups (the *ayllus*). The Inkas and local populations worshiped weather and creator deities, as well as *wakas* (a variety of sacred objects, places, and states of being) that united related groups of people spread out over the Andean landscape.¹⁶ All of these institutions and principles were incorporated into the grand, synthetic organization of political, social, and religious organization known as the *ceque* ("line/orientation") system—that regulated life in the Inka capital (see chapter 8).¹⁷ It was this complementarity of institutions and practices, from the capital down to the smallest villages in the hinterland, that formed the basis of Inka hegemony in Tawantinsuyu.

More specifically, there appears to have been a fundamental complementarity of social structure and organization between Cuzco, the capital, and settlements in the hinterland. For instance, when we look at the documentary evidence, we find that communities throughout the Andes in early colonial times were commonly organized in a dualistic manner, that is, villages were commonly divided into two parts. This division could be based on some physical feature, such as a river or an irrigation canal. Such dual divisions, referred to as *moieties* ("halves"), often represented the highest level of social organization in Andean villages (see chapter 3). The two halves—commonly designated as *hanan* ("upper," "superior") and *hurn* ("lower," "inferior/secondary")—were usually each composed of multiple kin groups, known as *ayllus*. Further, the *ayllus* were commonly ranked hierarchically within their respective *moieties*, which constituted an order of priority and prestige among these groups that was played out in local social, political, and ritual relations and practices.¹⁸

Early Spanish accounts of the organization of the capital, Cuzco, state that the city was divided into two parts: Hanan Cuzco and Hurin Cuzco. Hanan Cuzco was in fact higher in elevation than Hurin Cuzco. More important than topography, however, was the fact that Hanan Cuzco had ritual priority over Hurin Cuzco. Partially because they were older and more distant in time, the royal *ayllus* descended from the first five Inka kings were located in Hurin Cuzco, while those descended from the last

six kings were located in Hanan Cuzco. Therefore, as they were constituted in the capital and in the smallest settlements far from Cuzco, there was a compatibility, or complementarity, in the dualistic, hierarchical—upper versus lower—categories that organized social, political, and ritual relations within settlements across the empire. This social structural similarity represented a deep level of convergence between the Inkas and their subject populations. I would note that these are some of the principal frameworks encountered in the structures and patterning of elements (e.g., colors and numbers) in the Inka *quipus* (see chapter 3).

At the top of the administrative hierarchy in Cuzco and the empire stood the Inka. The indigenous chronicler Guaman Poma de Ayala details a number of officials who saw to the everyday needs and interests of the king. Most immediately, the Inka was attended to by a secretary (*Yncap cimin quipococ*, “he who carries the account of the words of the Inka”); a head accountant and treasurer (*Tawantin Suyu runa quipoc Yncap*, “he who carries the accounting of the people and goods of Tawantinsuyu”), and a counsel of four great lords, or *Apus*, each of whom was responsible to the Inka for the affairs in one or another of the four *suyus* of Tawantinsuyu. The *Apus* formed what Guaman Poma referred to as the Consejo Real, the “royal council” – a body that was served by a secretary, the *Tawantin Suyu capac Yncacanap cimin quipococ* (“he who carries the words of the Inka and the lords/*Apus*”).¹⁹ These were the principal authorities at the heart of what we could term “civil governance” in the Inka capital.

The state administration was served by a hierarchical cadre of *khi pukamayusqs*, from those residing in Cuzco, serving the Inka and his court directly, to those operating within the imperial decimal administration in distant provincial capitals and administrative centers. As will be seen, the decimal administration was critical to the financing of the Inka state, because this was the system used for recording censuses and for overseeing the state tribute, which was levied in the form of a labor draft (*mit'a*). All subjects of the empire were required to work on state projects a number of days each month; recruitment was managed by the decimal administration. Figure 2.1 is a schematic representation of the organization of labor units in the Inka tributary system. The arrangement goes from small, local-level groups of ten (*chunka*) workers, at the bottom, up to the largest grouping, of ten thousand (*hunu*), near the top. Above the latter, there stood the heads of the provinces (*t'oqri-*

Inka Decimal Administration

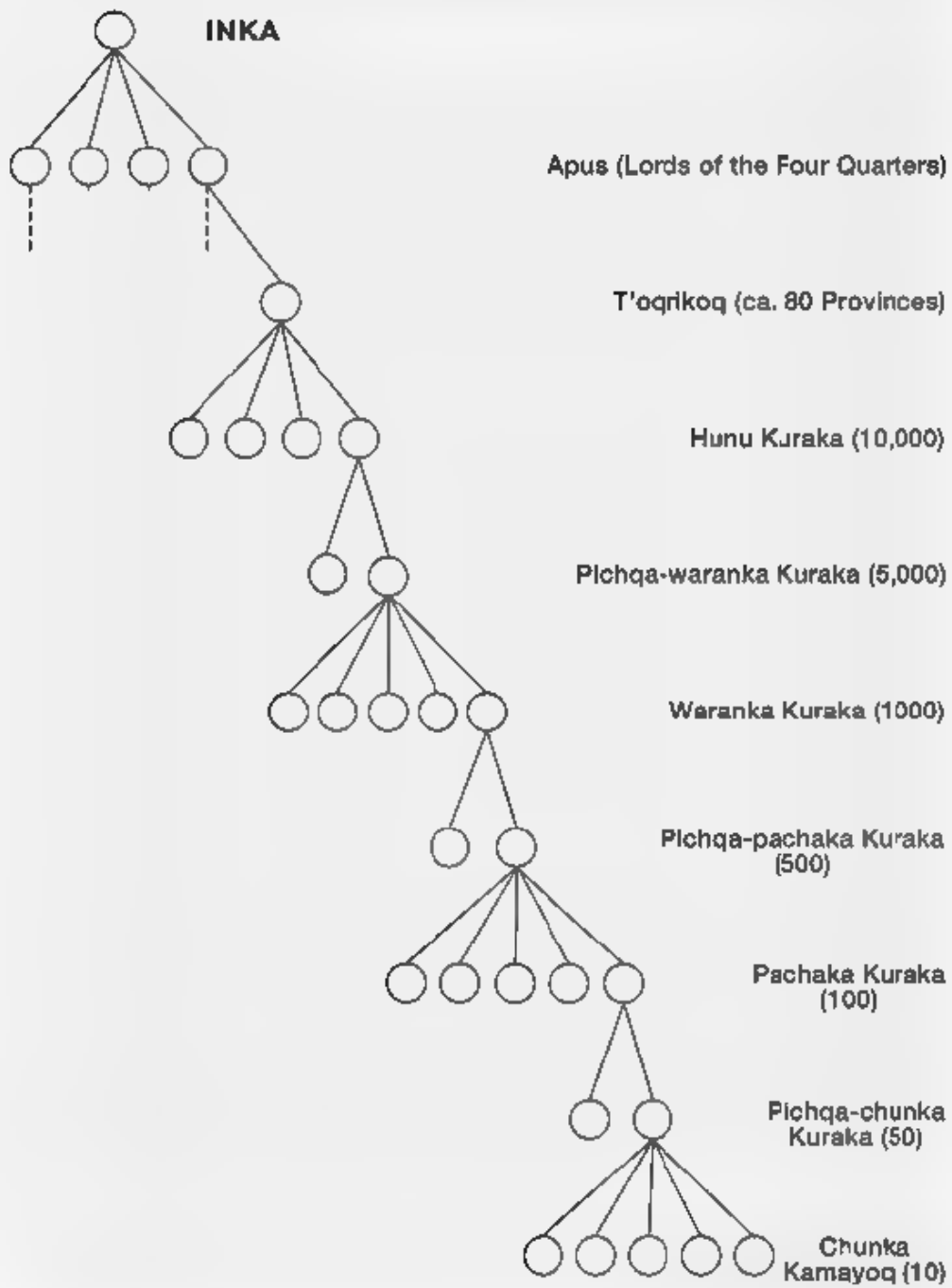


Figure 2.1. Inka decimal administrative structure with titles of kurakas
(drawing by Julia L. Meyerson, used by permission)

kogs), and above them stood the Lords of the Four Quarters (the Apus), who served the Inka, in Cuzco

In terms of the exchange of information pertaining to administrative matters, figure 2.1 represents the basic organization of two different, reciprocal flows of information that moved in opposite directions within the hierarchy. In this system, the expectations of higher level officials toward lower-level ones moved from the top of the hierarchy down; perhaps such information was sent from administrative centers along the Inka road, via *chaskis* (messengers) carrying *kipus*. This information would have been *partitive* in nature, that is, assignments made to one thousand tribute payers were broken down into tasks for two groups of five hundred, the latter of which was divided into assignments spread over five groups of one hundred, and so on. In the reverse direction, accountants in local communities passed reports on tasks performed upward through the hierarchical chain of officials. In this instance, information at each level represented the summation of accounts from the level immediately below. These accumulating data eventually arrived in the hands of state accountants in Cuzco, where the highest level of accounting took place.

What this implies is that the *kuraka* ("lord, overseer") of a unit of one hundred (*pachaka*) workers sent word to the heads of the two overseers of fifty (*pichqa-chunka*) workers under him that he needed each of them to enlist a specific number of tribute laborers for a state project. Ultimately, as (or immediately after) these two work groups formed and the work was performed, the two overseers of fifty tallied the work crews and then reported to the overseer of one hundred how many laborers had reported for work. I have suggested elsewhere that, because the demands for labor going down the hierarchy would probably have been "ideal," or desired, numbers, these numerical values would tend to be round numbers (i.e., "I need fifty laborers from each of you [kurakas of fifty]"); however, in the opposite direction, when the numbers of workers who arrived were counted and reported, these would be "historical numbers," actual counts, which would likely not be round numbers (e.g., "42 workers showed up [in one group of fifty]," and "47 workers showed up [in the other group of fifty]).

Not every organizational scheme of the Inka state aligned with the interests and traditions of their subjects. This was certainly the case with the decimal administration. The decimal system seems to have been in place in the region around Cuzco, as well as in the large quarter of the empire northwest of Cuzco, known as Chinchaysuyu.²⁰ To the

southeast, however, in the large quarter known as Collasuyu (including present-day Bolivia), the decimal system appears to have met considerable resistance, especially among Aymara-speaking populations around Lake Titicaca. The large confederations of different ethnic groups in central Bolivia were among the empire's most rebellious populations, and one form of resistance to Inka control involved persistent attempts on the part of these peoples to disregard decimal organization (an analogy might be the way North Americans have consistently evaded efforts to impose the metric system).

People in the capital and those throughout the hinterlands also worshiped their ancestors. In the case of the Inkas in Cuzco, this took the form of ritual celebration and worship of the mummified bodies of the dead Inka kings. Unlike ancient Egyptian mummies, which were hidden away deep inside royal tombs and pyramids, the mummies of Inka kings were kept in the temple of Qorikancha ("enclosure of gold"), the empire's most important and sacred temple, near the center of Cuzco. The royal mummies were frequently carried on litters to the main plaza of the city, where they participated in ceremonies and festivals with their living descendants, including the recitation by *kipukamayuchs* of the life histories and deeds of the Inkas. Garcilaso de la Vega describes the rhetorical tradition behind such public recitations:

The annals of the Indians consisted of similar traditions, which were reduced to a few words containing the gist of the matter so that it might more easily be remembered. . . . These matters were memorized by the historians and accountants, and were taught by tradition to their sons and successors. These figures and short verses and odd words, such as the name of this captain and others we have mentioned . . . were intended only to bring the subject to mind of the historian or accountant, who would already know the tradition concerned. By the use of his notes, which were the knots, marks, and cyphers, he could read off his history better and faster than a Spaniard with a book.²¹

In the countryside, the *ayllu* kin groups also mummified and worshiped their ancestors. *Ayllu* ancestral mummies were commonly kept in *machays* (caves) or in *chullpas* (burial houses), which were located near the settlements occupied by their descendants, the latter of whom regularly visited the ancestors, changing their clothing and offering them food and drink (see the discussion of *kipus* kept with mummies in Chachapoyas, in chapter 4). There was a hierarchy of prestige and power

in ancestor worship across the empire, with the mummies of the Inkas receiving the highest, state-level ritual priority; the mummies of ancestors of high-ranking regional ayllus came next, and finally, the mummies of lower-ranking commoner ayllus were worshiped by people in local settlements

The Inkas grafted onto ancestor worship another level of state religion, overseen by a hierarchy of priests, that focused on a pantheon of deities, with the creator-deity (Viracocha) and the Sun (Inti) at the top, accompanied by a host of deities linked to powerful natural phenomena, such as Lightning, the Rainbow, and Thunder. Local oracles, such as the great oracle at Pachacamac, on the central coast of Peru (see chapter 6), were important centers of religious activities and played a role as well in the political integration of the empire. The commemoration and worship of these deities in state-sponsored festivals attended by local officials and the general populace, typified by the consumption of great quantities of chicha, or maize beer (see chapter 7), were important features of the Inkas' exercise of power and control over subject populations.

Finally, I note another feature of Inka imperial organization that brought state interests directly into contact with local communities throughout the empire. All land—and, according to some reports, camelid herds—was divided into three parts.²² While our colonial sources have not allowed us to map out this division of lands into thirds in any given region, it is clear that the “thirds” were not equal in size; rather, they were portions, the precise dimensions of which would have been worked out, on the ground, between state agents and local officials.²³ In this division, one-third of the land belonged to the Inka and was used locally to produce crops and herds in support of state projects. Another third was assigned to the gods of the empire and was used to support religious rituals and ceremonies as well as the priestly hierarchy that attended to those events. The final third of all land (and herds) was set aside for the use of the commoners. These lands, which were designated for the support of the ayllu kin groups, were managed by the local lords (*kurakas*), who were also responsible for recruiting their fellow ayllu members, in decimal groupings, to work the lands of the Inkas and the gods.²⁴ For occasions requiring large work parties, Inka state administrators sponsored elaborate feasts of food and drink drawn from the goods stored in state storehouses. This largesse was understood by everyone as reciprocity by the state toward local populations for the

labor they provided in caring for the lands and herds of the Inkas and the gods.

The Inkas maintained an extensive and sophisticated system of storage facilities in which both staple produce from the lands of the state and the gods and luxury goods and other sumptuary items (textiles, shell, metals) were stored.²⁵ Khipus were put to use extensively in storehouse accounting, as we will see in an analysis of the complex and sophisticated storehouse khipus excavated in 2013–2014 at the south coastal Peruvian site of Inkawasi (see chapter 9).²⁶

The three-part division of the land and herds was no doubt facilitated and probably actually made possible by the Inka practice of making a complete inventory of all resources in the conquered territories. This information was recorded on khipus, as was no doubt the three-part apportioning of land and herds discussed above. Garcilaso de la Vega describes this complex and demanding process of inventorying, measuring, and recording information pertaining to state-controlled resources as follows:

When the Inca had conquered a province and had its inhabitants counted, and had appointed governors and teachers of his idolatry, he set about establishing order in the affairs of the region. For this purpose he had a record made on his knots and beads of the pasture lands, high and low hills, ploughlands, estates, mines of metals, salt-works, springs, lakes, and rivers, cotton fields, and wild fruit-trees, and flocks of both kinds, including those that produced wool and those that did not. All these things and many others he had counted, measured, and recorded under separate headings, firstly the totals for the whole province, and then those for each village and each inhabitant. They measured the length and breadth of the arable land, the cultivable area, and the pasture land. When all the details were known, a full report was made of the whole province.²⁷

Garcilaso's description may be an idealized account, as he was given to celebrating the great efficiency and accomplishments of his mother's people. Nonetheless, it surely represents at least an ideal of how Inka administrators intended to inventory and organize conquered territories. Garcilaso's account also makes clear the remarkable subtlety that characterized the khipu accounts; how, for instance, can we suppose they signified in their knots and cords the differences among "arable land, the cultivable area, and the pasture land"? We know that such

matters were handled by means of very complex recording and reckoning procedures in many ancient recording and writing systems,²⁸ and we will draw on relevant comparative materials below to help formulate hypotheses concerning how *kipu* recording was accomplished in such circumstances

Khipu Structures and General Recording Principles

Before turning in the following chapters to examples of *kipus* coded with social organizational information, I provide here a general description of how *kipus* are constructed and organized.

The basic structural features of *kipu* are shown in figure 2.2. The “backbone” of a *kipu* is a linear cord known as the primary cord. This is usually the thickest cord on a *kipu* and is constructed of many sets of plied threads, the entire bundle of which generally is given a final S-twist.²⁹ Attached to the primary cord, usually via a lark’s head knot, is a variable number of so-called pendant strings, or cords. Pendant cords may carry second-order cords, referred to as subsidiary cords, which themselves may carry subsidiaries. *Kipus* have been identified with as many as six levels of subsidiaries. *Kipus* may include other structural

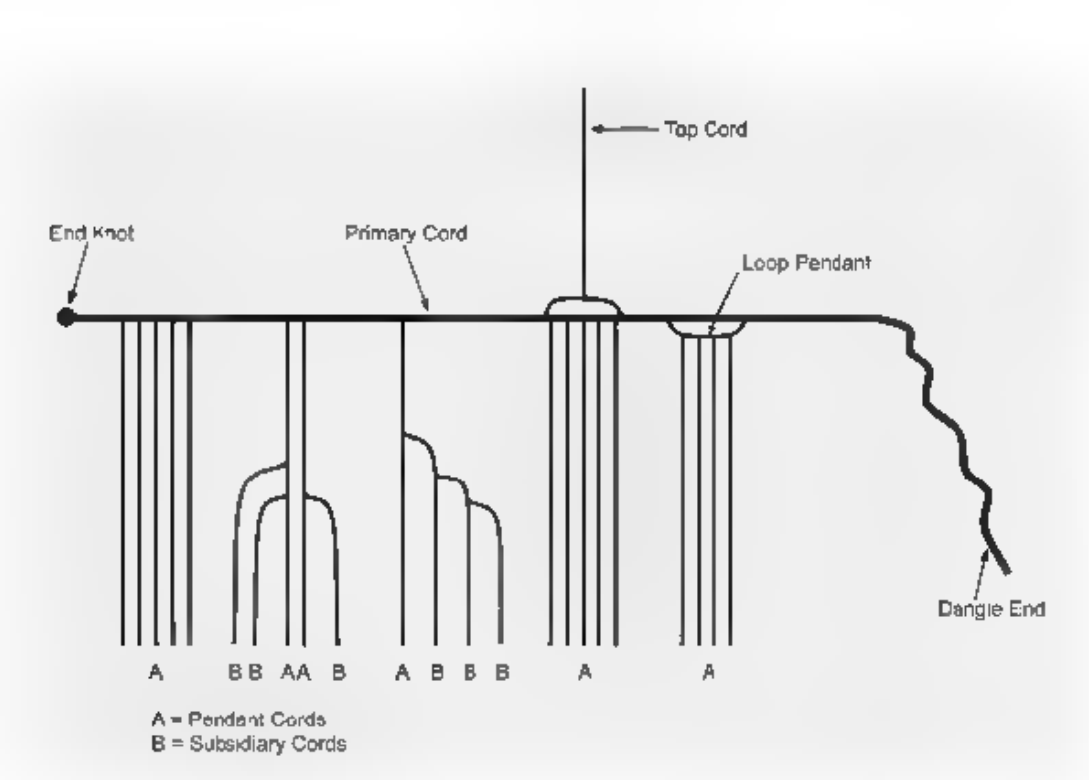


Figure 2.2. Basic *kipu* elements and structures (drawing by Julia L. Meyerson, used by permission)

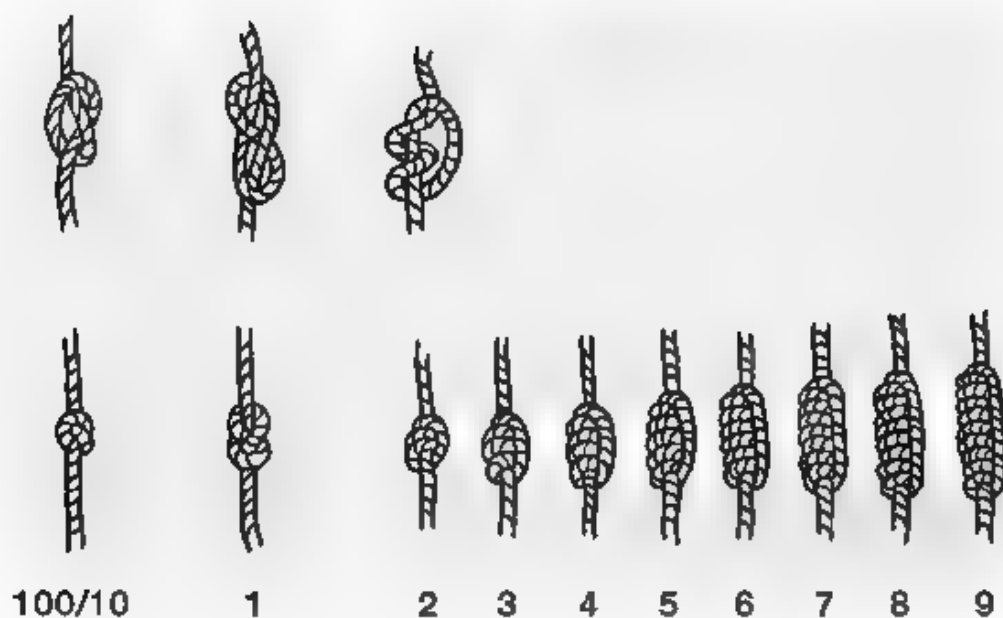


Figure 2.3. Khipu knot types (drawing by Julia L. Meyerson; used by permission)

features as well, however, the most important elements are the primary cord, pendant strings, and subsidiaries.

It is generally thought that a khipukamayuy consulted, or read, a khipu by extending the primary cord between his hands, so that the primary cord was oriented parallel to the ground and the pendant strings were hanging vertically, as shown in figure 2.2. Among other possible techniques for accessible reading, khipus may have been attached to pegs or other devices against a wall, or even stretched between the hand of the khipukamayuy and a toe.³⁰

The majority of khipus have knots tied into their pendant, subsidiary, and top strings.³¹ The most common knots are of three different types (fig. 2.3): figure 8 knots (signifying 1s), long knots (signifying values between 2 and 9), and single knots (for full decimal values 10s, 100s, 1000s). On decimally organized, quantitative khipus, the knots are tied in clusters at different levels in a place-value system of decimal numerical registry (fig. 2.4). The most thorough treatment to date of the numerical, arithmetic, and mathematical properties of the khipus is Ascher and Ascher's *Mathematics of the Incas: Code of the Quipus* (1997).³² The Aschers have shown that the arithmetic and mathematical operations employed by Inka accountants included, at a minimum, addition, subtraction, multiplication, and division, division into unequal fractional parts and into proportional parts; and multiplication of integers by fractions.³³

About one-third of all khipus studied by the Harvard Khipu Data-

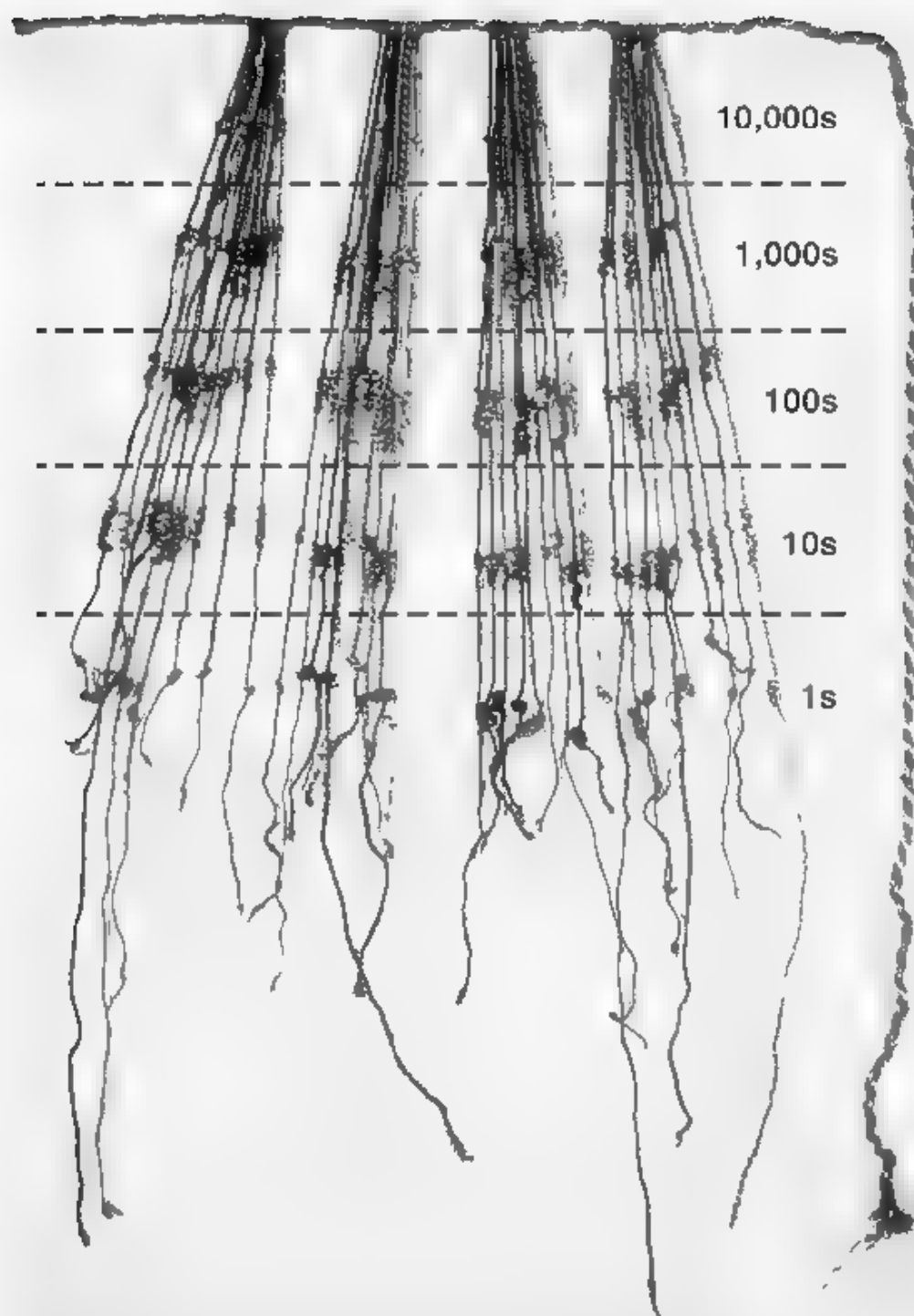


Figure 2.4. Decimal hierarchy of knot place values (drawing by Ulia L. Meyerson; used by permission)

base (KDB) project do not have knots arranged in a decimal manner. These particular examples, often termed nondecimal, or “narrative,” *kipus*, are thought to contain information coded in some manner not yet “readable,” which were consulted for the performance of stories, songs, and the like.³⁴

This overview gives only the barest outline of what is known about the Inkas, their mode of living, and the institutions and practices by which they governed the peoples of Tawantinsuyu. *Khipu* record keeping was critical to many Inka institutions. The following chapters will explore some of those records—*kipus* in museum collections—to illustrate how the various types of records were produced and used in state governance by the *khipukamayus*.

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*Cord Notes for Describing an Inka-Era Village
on the Southern Coast of Peru*

As I suggested in chapter 1, advances in *kipu* analyses allow us to investigate how certain basic features of Tawantinsuyu's social and political organization were encoded in *kipus*. This appears to have been accomplished at least partially by aligning and organizing cord groupings—recognizable by differences in cord color and/or spacing between cord groups—according to the basic categories into which different groups and types of people were organized within a community, such as households, *ayllus*, and *moieties*. This alignment produced a parallelism between *kipu* structures and sociopolitical structures that represented the “script” from which a community's social organization could be “read off” by a *kipukamayuk*. But how did this work? What did such a “script” actually look like, and how would a *kipukamayuk* have engaged with a handful of knotted cords to produce and perform for the Inka, or any other member of the king's administration, an account of some social reality in a village in a far corner of Tawantinsuyu?

In this chapter, I will examine what I believe is a social organizational *kipu* script concerning a village in the region of Atarco, in the Nazca valley, on the south coast of Peru. The *kipu* in question, UR28, is one of six *kipus* tied together, and these are housed in the collection of the Museum für Völkerkunde, Munich.¹ UR28 shares many features with census *kipus*. In fact, two other *kipus* of the six tied together in this “linked set”—UR23 and UR29—almost certainly contain census data; these are discussed in chapter 10.² The entire six *kipu* linked set from the Munich museum is shown in figure 3.1

Not only does UR28 contain a census-like accounting of the numbers of tributary heads of households in what I think was a village-level



Figure 3.1. The six *hipu* linked set from Atarco, Nazca (courtesy of Museum Fünf Kontinente, Munich, photograph by Mar anne Franke)

organization, but the group of individuals referenced in UR28 appears to have been organized into several *ayllus*, which in turn are grouped together into two moieties, probably designated locally as *Hanan* (upper) and *Hurin* (lower). This is one of the clearest examples of which I am aware of how we might “read” sociopolitical organization off a census-like *hipu*. I argue that this example in particular gives us considerable confidence in the method proposed in the introduction for reading “meaning signs”—semasiographs—pertaining to village-level social organization in Tawantinsuyu.

Numeration, Rank, and Identity

Khipu UR28, along with the five other *hipus* in the linked set, was reportedly recovered from grave robbers (*huaqueros*) at Atarco, near Nazca (see fig. 3.2).

Khipu UR28 consists of seventy-four pendant cords made of fine S-ply cotton threads. Fifteen of the pendant cords bear one subsidiary cord each. Readers may follow the discussion of the organization of this *hipu* by viewing table 3.1. The cords of UR28 are for the most part either light brown (AB) or medium brown (MB), although there are a few dark

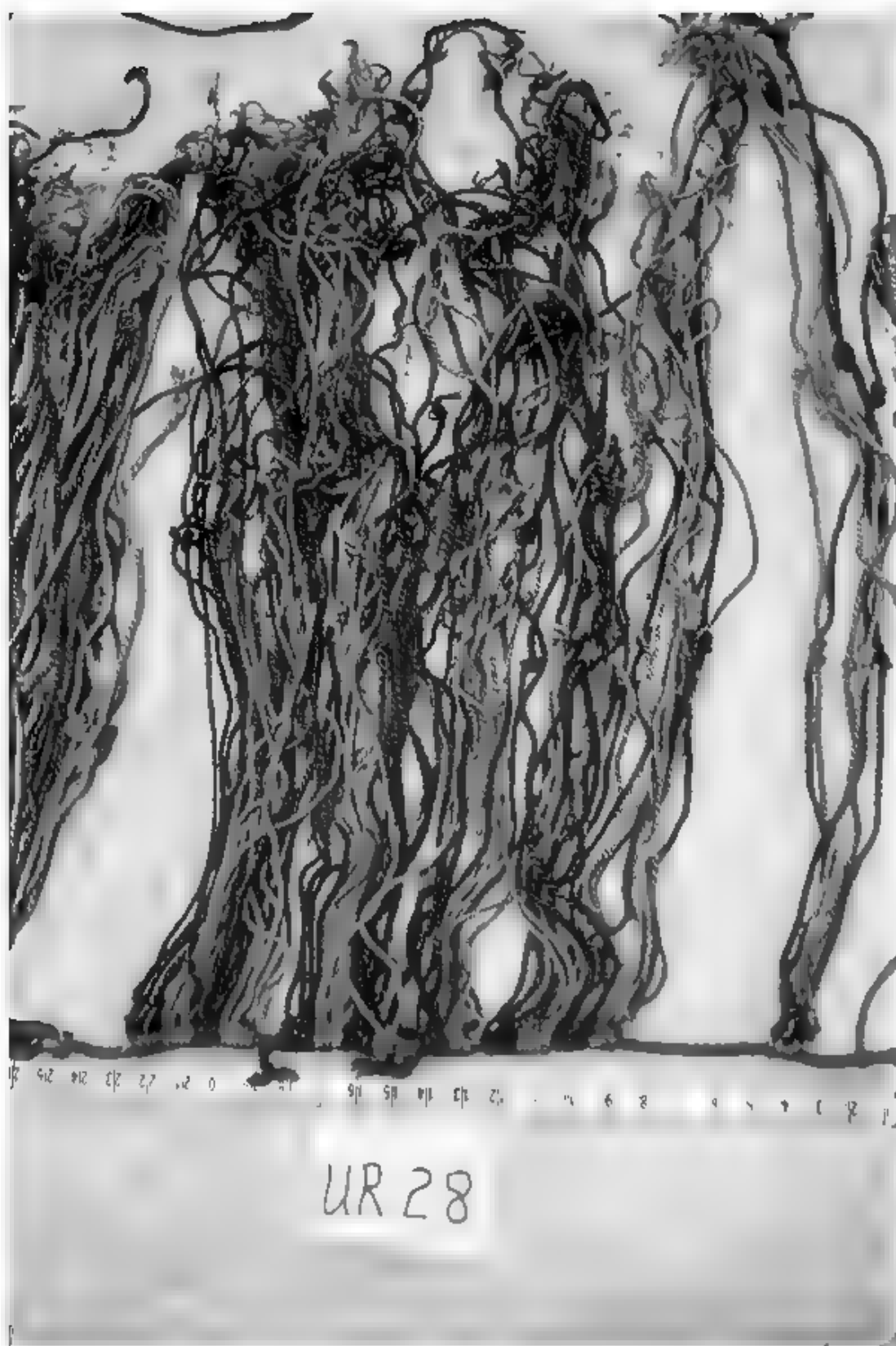


Figure 3.2. Khipu LR28 (courtesy of Museum Funf Kontinente, Munich, photograph by Marianne Franke)

Table 3.1. Organizational scheme of khipu LR28

(A)			(B)			(C)		
1	AB	102						
2	AB	29						
2s1	MB	14						
3	AB	13						
3s1	MB	10						
4	AB	12						
4s1	MB	24	102					
54 48								
5	AB	6	15	AB	2	25	AB	4 12
						25s1	KB	
6	AB	2	16	AB	1	26	AB	1 4
7	AB	1	17	AB	2	27	AB	1 4
7s1	KB							
8	AB	2	18	AB	2	28	AB	1 5
			19	AB	2	29	AB	2 4
9	AB		19s1	KB				29
10	MB	2	20	MB		30	MB	2
11	MB	2	21	MB	1	31	MB	3
12	MB	2	22	MB		32	MB	2 4
13	MB	1	23	MB		33	MB	1
14	MB		24	MB	3	34	MB	1 4
14								
M1								
35	AB	3	45	AB				3
35s1	KB							
36	AB	1	46	AB	3			4
37	AB	1	47	AB	1			2
38	AB		48	AB	1			1
38s1	KB							
39	AB	1	49	AB	2			3
13								
40	MB	1	50	MB	1			2
41	MB	3	51	MB	1			4
41s1	KB							
42	MB	2	52	MB	1			3

Table 3.1. Continued

(A)			(B)			(C)		
43	MB		53	MB	1		1	10
44	MB		54	MB				
M2								
55	AB	1	65	AB	4		5	
56	AB	1	66	AB	2		3	
56s1	KB							
57	AB		67	AB	1		1	
			67s1	KB				
58	AB	1	68	AB	2		3	
59	AB	2	69	AB			2	14
60	MB	3	70	MB	1		4	
61	MB	3	71	MB	3		6	
61s1	KB		71s1	KB				
62	MB	2	72	MB			2	
63	MB	3	73	MB	3		6	
			73s1	KB				
64	MB	4	74	MB	2		6	
			74s1	KB				24
								104

brown (KB) cords as well (the latter are all subsidiary cords). At the most general level, *khipu* UR28 is organized into three sections as defined by the following cord groupings: (Group 1) = cord #1, (Group 2) = cords #2 #4, and (Group 3) = cords #5–#74. Table 3.1 is organized into columns, labeled (A), (B), and (C). Column A lists the cord numbers, from 1 to 74 (the notation *s1* that follows fifteen of the cords indicates a “subsidiary” attached to the pendant cord listed directly above it). The next subcolumn to the right (within each major column) lists the color of the cord, usually either AB or MB, but some KB. The subcolumn to the right of the color notations displays the numerical values knotted into the cords. And finally, the right-most subcolumn (appearing only in columns A and C) gives the sums of values recorded on groupings of cords in the subcolumn(s) to the left.

Table 3.2. Actual sums on cords #2-#5 and subsidiaries of khipu UR28

<i>Cord Number</i>	<i>Color</i>	<i>Value</i>
2	AB	29
2s1 ^a	MB	14
3	AB	13
3s1 ^a	MB	10
4	AB	12
4s1 ^a	MB	24
TOTAL		102

^a indicates a subsidiary cord

The organization of numerical and color values on khipu UR28 displays an arrangement that is either the summation of set values from left to right and from bottom to top, or the *repartition* (or subdivision) of set values from the top to the bottom and from right to left. That is, as we see in table 3.1, cord #1, an AB-colored cord, carries the value 102. This same numerical value is the sum of the values knotted into cords #2-#4 and their subsidiaries. The actual sums on the cord/subsidiary pairs of cords #2-#4 are shown in table 3.2. Note that pendant cords 2, 3, and 4 are color AB, while the subsidiaries of these cords (that is, 2s1, 3s1, and 4s1) are color MB.

What follows these two groups, in cords #5-#74, is a complicated arrangement of various groupings of “five cord sets.” Some of these five cord sets are what I term “odd” sets, in that the cord number of the first cord of each is an odd multiple of five (i.e., 5/15/25, 35/45, and 55/65). The cords of these “odd”-type five-cord sets are all of color AB (light brown). There are also what I term “even” five-cord sets; the first cord of each of these has a cord number that is an even multiple of five (i.e., 10/20/30, 40/50, and 60/70). The cords of the “even” five-cord sets are all MB (medium brown). It should be noted that the KB (dark brown) subsidiary cords located in the odd and even five-cord sets are all zero (0) value, therefore, these cords are not accounted for in the following discussion.

When we sum the values on the “odd” and “even” groupings of five-cord sets, as those groupings are defined above and laid out in table 3.1, we arrive at the value 104. Looking more closely, we find that, with one exception (see below), the sums are equivalent to those on either the pendant cords or the subsidiaries in cord positions #2-#4. Specifically, the “odd”/AB five-cord set sums are equivalent to the values on pendant

cords #2, #3, and #4, while the “even”/MB five cord set sums are equivalent to the values on the subsidiaries of the above three cords (i.e., #2s1, #3s1, and #4s1).

Clearly, there is a recording error either on cord #4 (– 12) or on the two “odd” five-cord sets (#55–#59) + (#65–#69), which totals 14. I strongly suspect that the error is on the latter cord groupings, and that the intended sum of this latter pairing of “odd” five-cord sets should be 12 (as on cord #4), rather than 14. If we accept this explanation for where the error lies, we then note that the value 102, which is registered both on cord #1 and as the sum of values on cords #2–#4 and their subsidiaries, is replicated on the complex of “odd”/AB and “even”/MB five-cord groupings from cord #5 to cord #74.

Interpretation

In sum, *kipu* UR28 comprises a complex arrangement of bicolor (AB/MB) cords organized in different arrays of “odd”/“even” five-cord groupings whose numerical sum (102) is given on cord #1 and reproduced both on the cords and subsidiaries from cords #2–#4 and on the AB/MB arrangement of cords #5–#74 as laid out above. What can we surmise about the use and significance of this *kipu* account? More specifically, in relation to the public performance of *kipu* accounts, how might a *kipu*-keeper have recounted the social organizational referents of the cord features and their structural array in a “reading” of UR28?

First, the numerical values registered on the five-cord sets are similar in magnitude (i.e., in the range 1–6, with an emphasis on the lower end of that range) to what I will argue in chapter 10 are census-type numerical values, particularly when what is displayed is not total household composition but rather the number(s) of tributaries per household. In the case of *kipu* UR28, the totals of the main cord groupings below cord #1 (which is valued 102) – that is, 29/14, 13/10, and 12/24 – could be the counts of tributary heads of households within clan-like, *ayllu* social groupings. Specifically, I would interpret the six values on cords #2–#4 and their subsidiaries as the counts of tributary heads of households of six *ayllus* in the area of Nazca in Inka times.

The total summary count, 102, is interesting in regard to census values. Numerous colonial Spanish sources³ inform us that one of the principal groupings used to organize populations in the Inka state census was the *pachaka* (one hundred), a group composed of one hundred tributary (i.e., *corvée*) laborers. Thus it appears not only that *kipu* UR28

contains an accounting of six ayllus, but that the total count constituted an administrative unit of one pachaka of laborers

What was the meaning, or the sociopolitical organizational significance, of what appears to be a division of this pachaka-sized census unit into two parts? The dual division is most apparent in the color difference between cords (i.e., AB versus MB), but it is also seen in the distinction between odd and even five-cord sets. I suggest that here we are seeing semasiographic sign values that were being used to identify a two-part moiety division of the pachaka. Such dual groupings were exceedingly common in the Inka state and they sat in the decimal hierarchy at a level below that of the group of 100 ($= 50 \times 2$). In most such instances, the two hierarchically related parts were referred to as Hanansaya (upper part) and Hurinsaya (lower part). I suggest that such a two-part sociopolitical moiety division was signed in khipu UR28 in three ways (a) by color (AB/MB), (b) by the distinction between pendant cords and subsidiary cords, at cord positions #2–#4; and (c) by the distinction between odd and even five-cord sets, at cord positions #5–#74.

In sum, I think that table 3.1 embodies a schematic, recursive representation of the moiety organization of the tributary heads of households that made up a pachaka-level administrative grouping of six ayllus at Atarco, near Nazca, whose census accounting was recorded on UR28

Thus, the group of (approximately) one hundred tribute payers detailed in UR28 would have been composed of the members of six ayllus, fifty-four members of which belonged to one moiety ($=$ AB), and forty eight to the other ($=$ MB). But if this was the case, which moiety was “hanan” (unmarked) and which was “hurin” (marked)? I suggest that the answer may be found in a principle of hierarchical organization that Terry Turner has termed “encompassment,”⁴ and according to which the dominant member of a ranked, asymmetrical pair stands for the two parts when they are represented as a single unit. Thus, when AB and MB—which I hypothesize were (respectively) hanan/unmarked and hurin/marked—are brought together within a single unit—i.e., the single pendant cord #1—the identity of that single unit is signed by the color identity of the dominant member of the pair, which, in this case, was AB/hanan (upper moiety).

Conclusion

If the numbers, colors, and odd/even distinctions among cord groups in khipu UR28 combined to detail the organization and status relations among the members of a group of six ayllus divided into moieties, we could conclude that this khipu represents the organization of information by the linkage of semasiographic signs for the numerical values and social types or social ethnocategories,⁵ making up a local population. Khipu UR28 represents the organization of local administrative information in an explicitly sociopolitical register.

A khipukamayuyq would have been able to read off the following structural information: the moiety organization of the village, including the hierarchical relationship between hanan and hurin; the number of ayllus into which each moiety was divided; and the number of tributary heads of household within each ayllu. It is important to stress that none of these names, identities, or statuses was recorded on the khipu in phonetic/linguistic terms, rather, the recording was done by cord groupings and numerical and color patterns, which were combined in a way that represented to the knowledgeable khipukamayuyq the meaning signs—semasiographs—of the social terms which the khipu-keeper would have recounted in a performative reading of khipu UR28, the social organization of a settlement in the region of Atarco, in the Nazca Valley.

In larger terms, and no doubt in theory (i.e., this may not have been realized in all cases), I suggest that community registers such as UR28 would have been constructed for every settlement in the empire—at least this would have been the intention of the cord keeping administration. As we will see later, most such community registers were produced in duplicate, one for/by the hanan (upper) khipukamayuyq, the other by the hurin (lower) cord keeper. Garcilaso de la Vega provides testimony to this effect:

Although the *quipucamayus* were as accurate and honest as we have said, their number in each village was in proportion to its population, and however small, it had at least four and so upwards to twenty or thirty. They all kept the same records, and although one accountant or scribe was all that would have been necessary to keep them, the Incas preferred to have plenty in each village and for each sort of calculation, so as to avoid faults that might occur if there were few, saying that if there were a number of them, they would either all be at fault or none of them.⁶

We will analyze other examples of multiple *kipu* accounts of community organization in many of the following chapters. And finally, I would note that the kind of fine grained, structural, and statistically informed histories—in the tradition of *Annales* demography-based histories—that I chronicle in this book are built up of such mundane, local social registers as that analyzed here for Atarco, a preconquest village

FOUR

The Ancestors' Calendar

LAGUNA DE LOS CÓNDORES, CHACHAPOYAS, NORTHERN PERU

In this chapter I will analyze a group of *kipus* that were discovered in 1996 in an opening on a cliff face high above a lake, called Laguna de los Cóndores (Lake of the Condors), in the northeastern Andes of Peru. The site is located just east of the border between the departments of San Martín and Amazonas, some twenty-seven kilometers southeast of the town of Leymebamba (Prov. of Chachapoyas, Dept. of Amazonas; fig. 4.1). In pre-Hispanic times, this region was included within the territory of the Chachapoya¹ chiefdom, or multiethnic confederation.² Of the thirty-two *kipus* recovered, only twenty-two were well enough preserved to permit study.³

I will first provide an overview of the context in which the *kipus* at Laguna de los Cóndores were found, followed by an analysis of the numerical contents and the possible calendrical and sociopolitical significance of an exceptionally large and complex specimen from this collection. I will suggest that this large *kipu* was the record kept by a specific individual, a native Chachapoyan lord, named Guaman (although this individual would have probably been buried elsewhere, perhaps near Cochabamba, his home *ayllu*). The suggested attribution of a *kipu* to a specific, known individual is the first attempt in studies of precontact *kipus* to attach a specific example of one of these devices to a particular, named historical individual. Two smaller *kipus* from the site match a section of the large *kipu*, and I argue that the two small *kipus* were the paired (probably moiety-based) sources from which that portion of the larger *kipu* was drawn up. In effect, what we will encounter here is a recording circumstance that would be like several pairs of small, Atarco *kipus* (see chapter 3) being synthesized into a single large *kipu*.

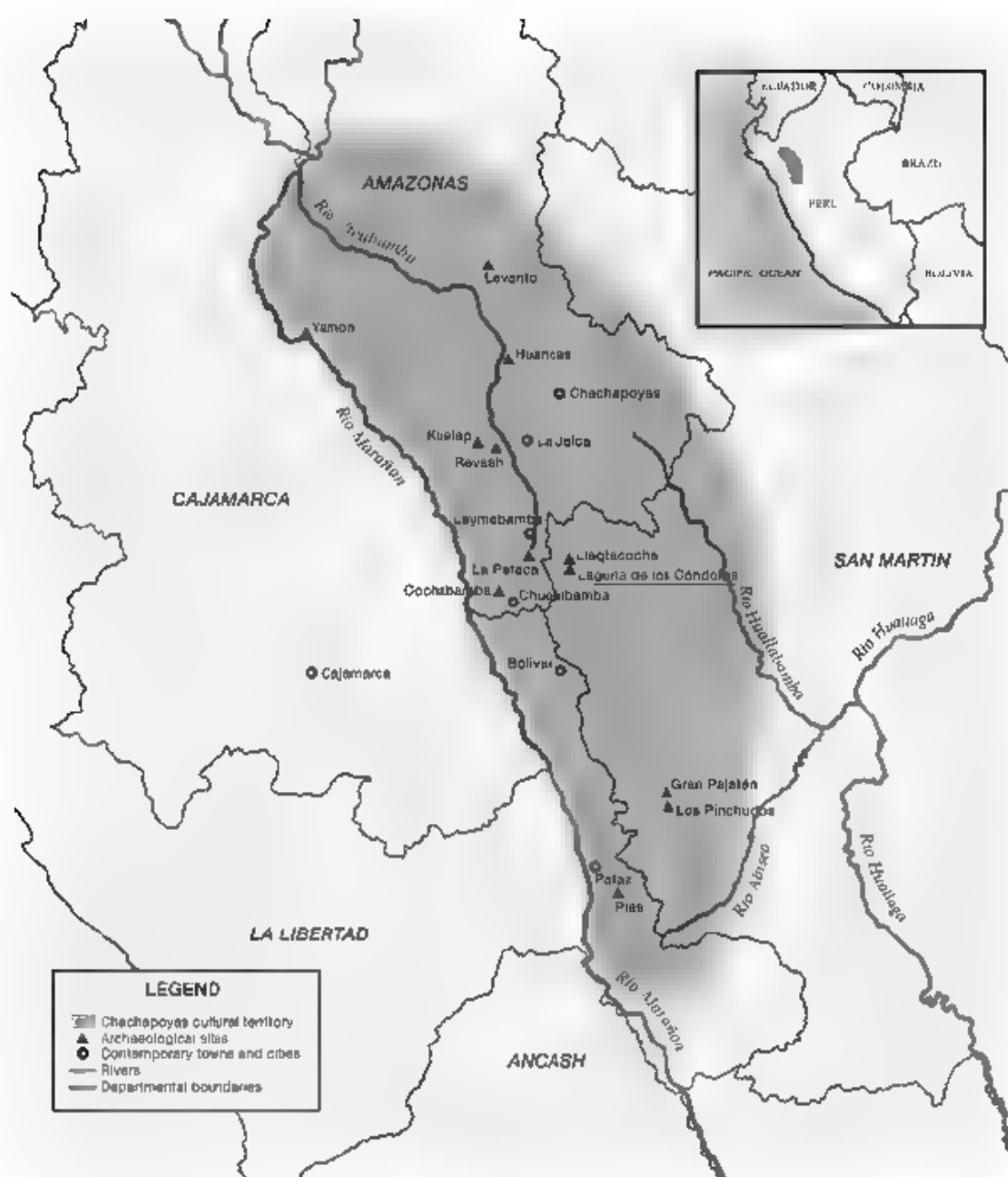


Figure 4.1. The extent of Chachapoya territory (drawing by Jul'a L. Meyerson, used by permission)

The Chullpas of Laguna de los Cóndores

In 1996 a group of laborers chopping down trees near the Laguna de los Cóndores spotted a painting on a cliff face high above the lake. Making their way around the lake and up the cliff face to the site, they encountered seven stone and mortar constructions, commonly referred to as “chullpas” (burial chambers), that had been tucked into the overhang (fig. 4.2) Each of the chullpas contained numerous mummy bundles, totaling some 225 in all, as well as a wealth of grave goods, among which



Figure 4.2. The chullpas at Laguna de los Cóndores (photograph copyright Keith Muscutt, used by permission)

were pottery, textiles, pyro-engraved gourds, wooden sculptures, and a collection of thirty-two *quipus*.⁴ The men looted the site for a short time, hacking open numerous mummy bundles with their machetes, in search of what they presumed would be gold and silver. Police in Leymebamba got wind of the looting and confiscated some of the looted artifacts from the owner of the cattle ranch on which the site is located. Thanks to the quick action of Peter Lerche, a long-time resident, historian, and guide in the region, most of the material from the tombs was eventually recovered.⁵

The chullpas at Laguna de los Cóndores served as the resting places of the mummified remains of the dead during the several centuries-long period leading up to the Inka conquest of the region, through the Chachapoya-Inka period (ca. AD 1450–1532), and on into the early colonial era. Continued use of the site for burial into colonial times is confirmed by the presence of such items among the burial remains as a small wooden Latin cross, Spanish glazed pottery, and a variety of European glass trade beads. Some of the glass beads were found inside a few of the mummy bundles—among these were spherical red-white-blue-green beads, as well as the tubular types known as Nueva Cádiz Plain and Nueva Cádiz Twisted. The latter two types of beads were introduced

into Peru during the earliest years following the Spanish conquest (if not, like the germs of the conquerors, even somewhat earlier) and likely continued to be circulated until the early seventeenth century⁶

In pre-Hispanic times, the living descendants of the mummies in the chullpas probably numbered among the local Chilchos ethnic group as well as other neighboring ethnic groups. The local Chilchos population probably lived in a settlement across the lake, called Llaqtacocha (Lake Town). The mitimae and a few Inka bureaucrats who entered the region with the Inka conquest of the Chachapoya would also have lived at the same site,⁷ although the main residence of the Inkas may instead have been at one of the nearby administrative centers, such as Leimebamba (Leymebamba) and/or Cochabamba.⁸

Why did the inhabitants of the Laguna de los Cóndores and environs bury, or leave as offerings, these knotted-string documents in the hard-to-reach tombs of the(ir) dead? It is an arduous walk from Llaqtacocha around the lake to the foot of the cliff in which the tombs are located, followed by a difficult climb up the side of the cliff and then across a narrow trail to the tombs. The difficulties of this excursion notwithstanding, it is clear from the large number of dead buried in these tombs, as well as from the pre-Columbian and colonial artifacts stowed in the chullpas with the mummies, that the inhabitants of Llaqtacocha and perhaps other neighboring settlements did in fact make this journey innumerable times over several centuries.

I believe that in the pre-Hispanic and early colonial Andes, the mummified remains of the dead were given custody of records which still had the capacity to communicate with the living because these were not simply dead bodies, but rather they were ancestors. In Andean ideology and cosmology, ancestors—whose mummified remains were referred to by the term *mallki*—were objects of great veneration and worship.⁹ *Mallkis* were often kept in caves or in other built structures that afforded the living access to the ancestral mummies.¹⁰ As Doyle has noted in her excellent study of burial ritual and ancestral cults in seventeenth- and eighteenth-century central Peru,

From the documentary testimonies it is apparent that cave *machays* [burial chambers] were almost always sealed with irregularly shaped, uncut stones, while the doorways of the other types of *machays* [e.g., subterranean and above-ground built structures] are rarely described. The doorways were not designed to be permanently sealed because periodic access to the interior was necessary for the perfor-

mance of ceremonies honoring the dead and the placement of new burials¹¹

In pre-Hispanic and early colonial times, the mallki of any particular social group, such as an ayllu or pachaka, was regularly visited, given food and drink, redressed, and asked for aid and guidance. The mallkis were considered to be the owners and providers of all plant and animal food and the proprietors of agricultural fields, irrigation canals, terraces, and the like within the home territory of the ayllu. For these reasons, many rituals and ceremonies were performed to honor the ancestors in the caves (mach'ay) where they were interred.¹² Mallkis commonly communicated with their living descendants through an intermediary, usually a member of the deceased's ayllu, who served the mallki as its oracle.¹³

I suggest that at the site of Laguna de los Cóndores, the interaction between past and present was also mediated by the khipus. In particular, the information inscribed in such "texts" would have been of great interest and importance for both the living and the dead—that is, for the past and present of the group for whose history they were relevant. While there were no doubt many such knotted-cord texts that were consulted for recitations of such things as myths of origin (e.g., of life, death, the ayllu) they would probably have also contained information on what we might term more mundane matters, such as ayllu census records and tribute accounts. From the perspective of the social collective to which such records pertained, the cord accounts that defined the group as a unity might well have been considered better off kept by the ancestors, rather than by a living individual (with their personal motives, interests, and other foibles).

The information recorded on one large khipu from this area, as well as two smaller ones, I argue, is primarily census and tribute data that probably pertained to some of the groups of people who lived at Llaqta-cocha. The discussion below will therefore provide another local, but northern Andean, perspective on the kinds of census and social organization information recorded on local khipu accounts, such as we saw in chapter 3 on khipu UR28, from the southern coast of Peru. This close study of three khipus recovered from Laguna de los Cóndores will not only offer deeper insights into how local social organization was encoded in khipus but also illustrate how such information might have provided people with a historical perspective on their past.¹⁴

In terms of its size, state of preservation, and the organization of the information that was spun, twisted, strung, dyed, and knotted into khipu UR6, it is one of the most spectacular examples recovered from Laguna de los Cóndores (see fig. 4.3).¹⁵ Khipu UR6 contains a total of 762 pendant strings. All of the strings are made of Z-spun, final S-ply cotton fibers

Compared to other khipus in this collection, the pendant strings of khipu UR6, attached to the primary cord, are organized in an unusual but highly systematic manner. That is, with only a few exceptions, the basic unit of organization of the pendant strings is a paired set (fig. 4.4). One member of these paired sets is composed of twenty, twenty-one, or twenty-two pendant strings attached directly to the primary cord, and the other member of the pair is composed of eight, nine, or ten pendant strings (fig. 4.5). These latter pendants, however, are not attached directly to the primary cord; rather, they are attached to a string whose two ends are attached to the primary cord. These “intermediary” strings (so called because they stand between, and connect, the pendant strings and the primary cord) hang down below the primary cord in a slight arc, or loop. I refer to these intermediary strings and the pendants attached to them as “loop pendants” (see fig. 2.2). There are twenty-four groups of paired sets of pendant strings + loop pendants on khipu UR6 (see table 4.1).

Before proceeding, I should note that in the following calendrical analysis of khipu UR6, I will set aside its thirty-two pendant strings that do not conform to the regular arrangement of paired sets—that is: [20, 21, 22] + [8, 9, 10]—of pendant strings as described above. The excluded pendant strings are those circled in table 4.1. I believe that these strings may have been used in some manner that I do not entirely understand at present, perhaps to provide flexibility in relation to one of the principal uses of this khipu, which served as a biennial calendar providing information pertaining to the organization of tribute labor in the region.¹⁶

There are two clear indications of the calendrical significance of the organization of the pendant strings on khipu UR6. The first is the number of strings in the paired sets, that is, if we take the mean value of the number of pendant strings in the twenty-four paired sets, we arrive at a (schematic) repetitive combination of $21 + 9 (= 30)$ pendant strings (see fig. 4.5). This count is, of course, the whole-number value closest to the number of days in a synodic lunar month (≈ 29.53 days), in which the month is defined in terms of the lunar phase sequence. If each one of

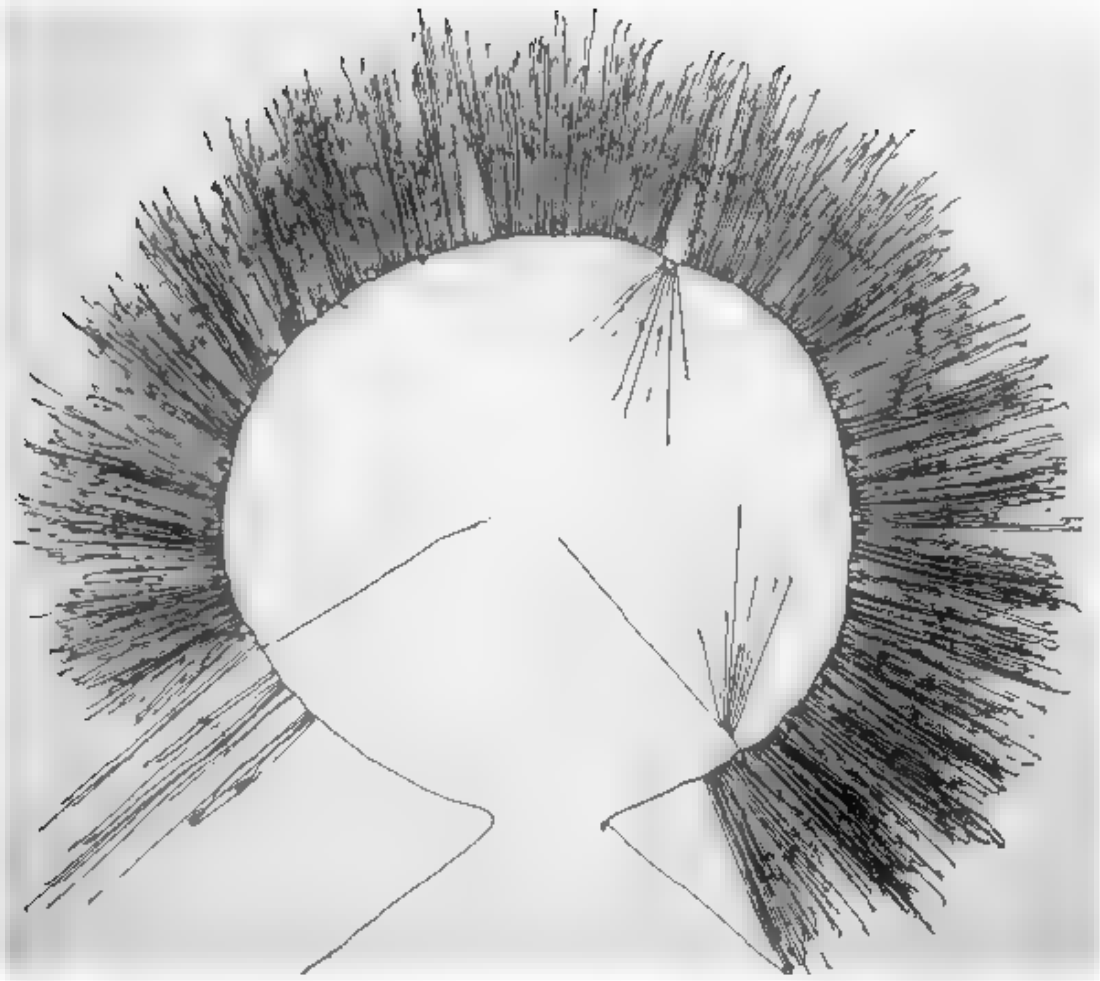


Figure 4.3. Kh.pu JR6, in circular layout (author photo, courtesy of Centro Mallqui, Leymebamba, Peru)

the twenty-four paired sets in khipu UR6 contained the mean number of strings (i.e., thirty), this would produce a total of 720 pendant strings ($30 \times 24 = 720$). One-half of this total would give us 360 pendant strings, a number close to an annual calendar count of 365 days. However, when we count the actual numbers of pendant and loop pendant strings in the twenty-four paired sets, we arrive at the number 730; one-half of this total count is 365, a number that coincides with the number of whole days in what is known as the “vague year” (i.e., the whole number of days in a solar year of 365.242 days). Thus, khipu UR6 appears on a superficial look to represent a calendar integrating twenty-four schematic synodic lunar-like periods into two (vague) year counts.

The actual pendant string counts for the four half year periods recorded on UR6 are illustrated in figure 4.6 and summarized in schematic form in table 4.2. In figure 4.6 and table 4.2, we note that the twelve paired sets of pendant and loop pendant strings in what I have labeled Year One contain a total count of 362 cords, the twelve paired sets for



Figure 4.4. Detail of khipu UR6: arrangement of pendant and loop pendant cord sets on primary cord (author photo; courtesy of Centro Ma'ik'u, Leymebamba, Peru.)

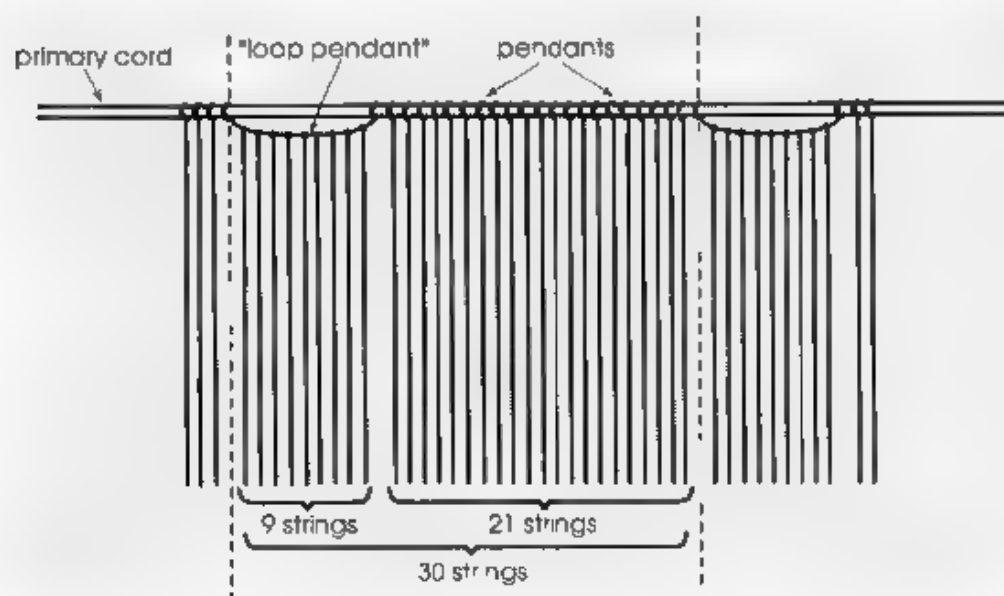


Figure 4.5. Organization of pendant and loop pendant cord sets of khipu UR6 (drawing by Carrie J. Breznice, used by permission)

Table 4.1. Pendant and loop pendant sets in UR6

	1,	(top strings)	9
	20		22
	9		9
(top string)	1,		22
	21		9
	9		22
	21		8
	9		22
	21		9
	9		22
	21		8
	9		21
	21		9
	9		4
	21		2
	9		5
	21		2
	10		5
	22		
	9		
	22		
	8		
	21		
	9		
	22		
(top strings)	9		
	21		
	9		
	22		
	9		
	22		
	9		
	4		
	22		
	9		
	22		
	9		
	22		

Note: shading indicates cord groupings not included in pendant/loop pendant arrangements.

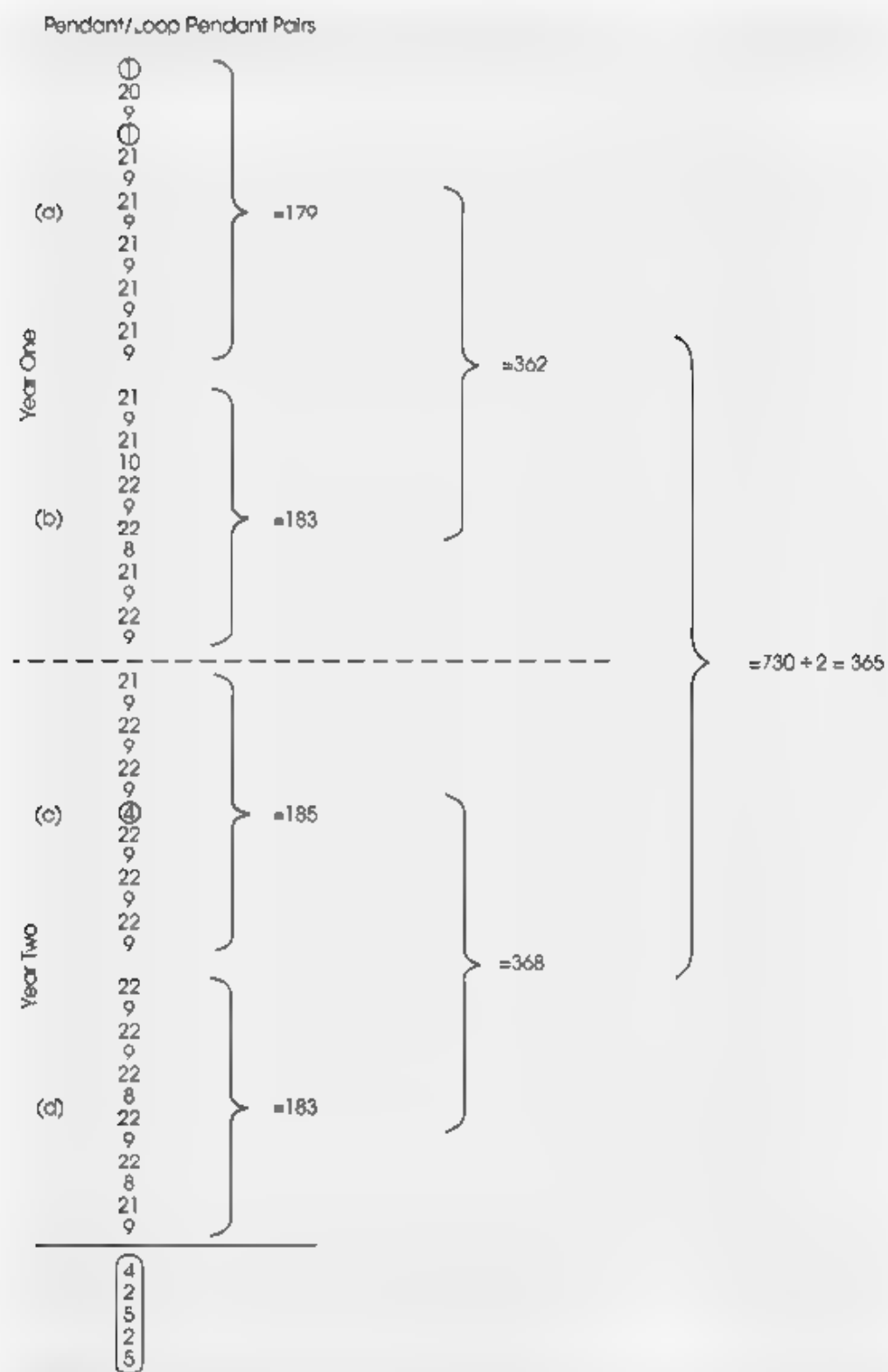


Figure 4.6. Biennial calendar organization of cords on khipu JR6 (drawing by Julia L. Meyerson, used by permission)

Table 4.2. The schematic organization of the biennial calendar count in khipu UR6

	<i>Year One</i>		<i>Year Two</i>
	29		30
	30		31
a)	30		31 (c)
	30		31
	30		31
	30	179 185	31
	30	183 183	31
	31		31
(b)	31		30 (d)
	30		31
	30		30
	31		30
TOTALS.	362	368	

Year Two contain a count of 368 cords. Thus, the average count of what I am calling the two years recorded in khipu UR6 is 365 (i.e., $362 + 368 = 730 \div 2 = 365$).

Therefore, in its organization of month-like cord groupings and the overall count of cords within those groupings over the twenty-four units, khipu UR6 appears to represent a biennial (two-year) calendar count. We should pause for a moment to consider the rather unusual circumstance of finding a khipu recording a double, or dual, rather than a single, year count. As has been stated at various points in previous chapters, the Inkas exhibited a strong emphasis on pairing and dualism in many aspects of their material culture and sociopolitical organization.¹⁷ We saw a clear expression of social dualism in the khipu from Atarco analyzed in chapter 3. In terms of expressions of dualism in material culture, Cummins has shown that Inka ceremonial drinking cups, called *keros*, were always produced in pairs.¹⁸ In fact, we find a notable emphasis on paired artifacts in the material recovered from the *chullpas* at Laguna de los Cóndores. For example, there are several pairs of pyro-engraved drinking gourds decorated with virtually identical designs.

In terms of political dualism, Schjellerup has noted that prior to 1960, villages in the Leymebamba region were paired for the purposes of maintaining the road system, bridges, and canals.¹⁹ Lerche not only detects a strong dualistic organizational principle in Chachapoya sociopolitical organization, but also argues that when polities in the past

were divided into dual groupings—one example of which is the ethnic dualism “Chilcho/Llaja”—these entities were each further subdivided into nine subdivisions.²⁰ We might think of the importance of this latter subdivision in relation to the organization of loop pendants in UR6 in groups of (generally) nine cords. Thus, it is not entirely unexpected that the Chachapoya Inka calendar specialist(s) would construct a dual, two-year calendar count.

At this first level of analysis, then, we can conclude that one of the messages the people from Llaqtacocha, across the lake from Laguna de los Cóndores, would have been reminded of when they visited the tombs up on the cliff and picked up *kipu* UR6—which was a powerful representation of what I would term the ideal, or proper, structure and organization of time—was that calendrical time is appropriately experienced in a pair of complementary, probably interconnected year counts. But what does one do with a two-year calendar count? What sense does it make to construct a calendar in which the annual cycle of 365 days is arrived at not by signifying that total number of days within a single annual calendar but rather by the average contained within two year-like periods? This is a major conundrum facing our efforts to interpret the meaning and purpose of this biennial calendrical construction. I note that it is possible that what is represented in this calendar is not two (different) years, but rather a “dual” representation of a *single* year in which the year count is arrived at by taking the measure of two quasi-annual periods and then averaging those counts (as we have done here) to arrive at the correct value—365.

In order to address the question of how a one- or two-year calendar count might have been used, we must shift our attention to the knot counts on the pendant and loop pendant strings of this *kipu*, which might give an approximation of the two-year organization of tribute labor in the region of Laguna de los Cóndores in late preconquest and possibly early colonial times. In other words, the data provide a possible explanation for integrally linking two years into a single calendar.

The Organization and Possible Significance of Knot Values in *Kipu* UR6

In table 4.3, I provide a reading of the numerical values of the knots tied into the pendant and loop pendant strings of *kipu* UR6. In the interpretation of knot-count values presented in table 4.3, I have divided the *kipu* at the following places: (a) the group of eighteen strings at the bottom of the *kipu*, which is not organized into paired pendant/

Table 4.3. Knot values in the biennial calendrical construction of kh pu UR6

Year 1		Year 2	
Pendants	Knot Count	Pendants	Knot Count
1	0	21	59
20	75	9	121
9	135	22	52
1 (top)	31	9	12
21	58	22	55
9	19	9	13
21	60	4	23
9	12	22	57
21	52	9	86
9	595	22	30
21	58	9	76
9	150	22	26
21	44	9 (top)	8
9	-10	= 983 Total: 3,042	
= 2,059		22	28
21	45	9	7
9	11	22	33
21	49	9	64
10	103	22	19
22	83	8	7
9	148	22	22
22	67	9	5
8	13	22	39
21	71	8	66
9	12	21	12
22	71	9	37
9 (top)	87	4	
		2	
		5	-26
		2	
		5	

loop pendant sets, and is separated from the long stretch of twenty-four pendant/loop pendant sets comprising what was interpreted above as the biennial calendar count; (b) another division is made between the two annual periods of the biennial calendar count, and (c) subdivisions of the two yearly counts are made (as in fig. 4.6 and table 4.2) to produce four six-month half-year periods. What could have been the significance, or the referents, of the numerical values knotted into the half-year, full year, and biennial counts of cords on UR6 as illustrated in table 4.3?

I think the best explanation for the numerical values knotted into the cords of UR6 is that they relate to the numbers of laborers assigned to state projects over a two-year period. That is, as we see in the knot values registered in table 4.3, counting all knot values (i.e., including those on cords not organized into the paired 21 + 9 sets), the knot count for Year One totals 2,059, while the Year Two count totals 983 for a grand total of 3,042. If we now eliminate the three groups of pendant strings circled in table 4.3, which are those cords not organized into paired 21 + 9 sets (31 + 23 + 26 = 80), we end up with a total, biennial knot count of 2,962. Interestingly, if we calculate the average of these two values ($3,042 + 2,962 = 6,004$ divided by 2) we arrive at an average value of 3,002. Significantly, we have arrived at this value by using knot values on cords that were eliminated from the construction of the biannual calendar to arrive at an average value from summing with the knot values tied into the cords that were included in the construction of the biannual calendar. As I argue below that the value 3,000+/- was what the *kipuka mayuq* using this *kipu* was seeking, we have now identified a use for the cords that did not conform to the 21 + 9 paired set construction of the majority of the *kipu*. That is, the values on these cords allowed the *kipu*-keeper to calculate a sum that averaged a high tributary count with a lower one to arrive at an average. As we will see below, the knot count 3,000 was, in fact, the total number of tribute-payers that were counted in the first census of the population (i.e., that of the Chilchos descendants of the *mallkis* at Laguna de los Cóndores) made in this region in early colonial times.

Ethnohistorical Accounts of Chachapoya Census and Tribute Records

Although there has not been extensive ethnohistorical work carried out on the early colonial population of central Chachapoya territory, around Laguna de los Cóndores, important colonial census data from the region are provided by Espinoza Soriano (1967), Lerche (1995) and Schjellerup (1997). We know that during the brief period of Inka domination of the region, the Chachapoya population was organized into decimal units of tribute-payers. Administrative oversight of the central Chachapoya region was conducted from the Inka site of Cochabamba, located to the southwest of Laguna de los Cóndores (see fig. 4.1) ²¹

As we saw in chapter 2, in the Inka decimal administrative organization, the principal accounting units among the Chachapoya (as elsewhere throughout the empire)²² were groupings of *chunka* (ten),

pachaka (one hundred), waranga (one thousand), and hunu (ten thousand) tribute-payers. These decimal units of accounting were used to keep track of what tribute amounts (i.e., days of work) subjects were required to contribute to the state. In the Inka Empire, the manner of “paying tribute” was through the performance of labor service for the state. This was undertaken in *mit’a*, “turns” of labor service performed by different tributary groups working in succession.²³ Now, we learn from one document, which dates to 1572, that during Inka times, the *cacique principal* (the top political and administrative official) of the large administrative region just to the south and west of Laguna de los Cóndores, which was occupied primarily by members of the Chilchos ethnic group, was a man named Guaman. Guaman is described in this document as the “lord” (*señor*) of the three warangas (three thousand tribute-payers) of Cajamarquilla, Condormarca, and Bambamarca.²⁴

Soon after the Spanish entered the Chachapoya region, in 1535, Alonso de Alvarado was awarded the *encomienda*—a grant by the Crown of the right of tax collection over natives, as well as responsibility for their well-being) of Cochabamba, Leymebamba, and Chilchos;²⁵ this *encomienda* grant included the *ayllu* of Chilchos Indians who were resettled—in the 1570s—in colonial *reducciones* (new towns) from the area around Laguna de los Cóndores. What is critical to note is that at the time of the establishment of this *encomienda* grant, Alvarado is said to have taken census information from a local lord named Francisco Guaman. As we learn from a close reading of the colonial documents from this region, Francisco Guaman was the same man identified earlier (i.e., in the document from 1572) as “Guaman,” the Chachapoya Inka *cacique principal* of the three thousand tribute-payers in this region. Francisco Guaman is said to have provided Alvarado with census data from *kipu* accounts in his (Guaman’s) possession.²⁶ In that census account, made in 1535, the total number of tribute-payers, or *mit’a* laborers, counted was three warangas—i.e., three thousand tributaries.²⁷

The number 3,000, or three warangas, may have been a rounded-off, or “idealized” number, as we often find in colonial documentation pertaining to censuses and tribute records.²⁸ Nonetheless, I find it remarkable and quite suggestive how closely the initial census count of three thousand *mit’a* laborers approximates the average of the numerical values encoded into cord counts that were and were not incorporated into the construction of the biannual calendar in *kipu* UR6.

I hypothesize that the value 3,000, and therefore *kipu* UR6 itself, referred to the distribution—probably for work assignments—of the

total number of tribute payers in the region of Laguna de los Cóncores, Leymebamba, and Cochabamba in late pre-Hispanic (i.e., Chachapoya-Inka) times. A remaining question is: Why does the calendar of (hypothetical) labor distribution over the two years contain such a marked difference between the number of laborers demanded in the first year (approximately two thousand) and the number demanded in the second year (approximately one thousand)? I cannot authoritatively account for this difference at present, other than to suggest that such a distribution carried out over time—i.e., two thousand and one thousand in alternating years—might represent an arrangement whereby local Chachapoya tasks would be performed with the smaller labor force whereas the larger force might represent the labor needed for more demanding, or onerous, state-level work tasks.

The Two Source Kh'pus for a Four Month Segment of UR6

We turn now to the subject of matches between a section of this khipu and two others found at the site. I have previously described (2005) what I refer to as two different forms of “matches” between any two or more khipus. One type is when a part of the numerical values knotted into sequential cords on two different khipus contains many of the same values, or when the values are close (“closely matching” khipus); the second form is when the values are identical (– “matching” khipus). In fact, there are close matches between a segment of UR6 and the data knotted into two other khipus found in the chullpas at Laguna de los Cóncores.

Table 4.4 contains the author's record of all numerical values registered in the knots tied into the pendant strings of UR6. (Note: Pendant strings with null value are eliminated from the accounting in table 4.4.) Basically, each of the paired, adjacent rows in table 4.4 contains a 21 + 9 paired cord set (see above) constituting a month-like period (i.e., 29–31 strings/days) in the two-year calendar of UR6. The segment of the calendar that we will be most directly concerned with here, as it contains the information which matches that recorded on two other khipus, extends from about the beginning of the thirteenth through the end of the sixteenth months, counting down from the top of the khipu. This is the portion of “section c” (the third six-month period of the two-year calendar) in bold type in table 4.4. The two khipus that have been found to closely match the four-month section of cord data highlighted in bold in table 4.4 are khipus UR9 (plate 1) and UR21 (plate 2).

Table 4.4. Numerical values knotted into khipu UR6

(a)

2, 1, 1, 1, 1, 13, 1, 1, 1, 1, 1, 9, 2, 1, 2, 2, 4, 1, 2, 5,
 1, 4, 1, 15, 2,
 1, 1, 7, 1, 7, 12, 30, 65, 20,
 1, 1, 2, 1, 1, 15, 10,
 1, 3, 1, 1, 4, 2, 1, 1, 2, 1, 12, 2, 15, 3, 3, 2, 4, 1,
 1, 1, 4 + 3, 1, 1, 1 + 1, 3 + 3,
 1, 1, 1, 1, 10, 2, 1, 11, 2, 7, 2, 7, 2, 8, 2, 1 + 1,
 2, 1, 1 + 1, 3 + 2, 1, 1,
 1, 1, 1, 6, 1, 2, 1, 1, 2 + 1, 4, 9, 2, 5, 2, 9, 2, 2,
 18 + 2, 2, 4 + 2, 2, 16 + 4, 1, 10 + 3 + 6, 521, 10 + 8 + 6,
 1, 1, 2, 2, 2, 7, 1, 1, 10, 3, 7, 3, 2, 2,
 14, 2, 1, 7, 2, 1, 6, 1, 30, 80, 20,
 1, 3, 2, 1, 3, 1, 1, 1, 10, 18, 2, 1,
 1, 1, 1, 1, 6.

(b)

1, 1, 3, 1, 3, 1, 8, 6, 9, 8, 3, 1,
 2, 1, 2, 4, 1, 1,
 1, 2, 6, 1, 1, 1, 13, 9, 7, 6, 2,
 8, 2, 5, 1, 9, 1, 15, 40, 22,
 2, 2, 2, 2, 3, 3, 9, 3, 2, 1, 12, 1, 6, 1, 6, 9, 19,
 2, 1, 9, 4, 4, 1, 1, 20, 71, 35,
 2, 2, 2, 3, 1, 1, 4, 1, 2, 1, 3, 1, 15, 21, 2, 5, 1,
 1, 1, 5, 1, 5,
 2, 2, 1, 1, 3, 3, 1, 13, 1, 3, 4, 3, 10, 9, 10, 5,
 2, 3, 5, 1, 1,
 2, 1, 2, 2, 1, 2, 10, 1, 7, 1, 1, 6, 10, 5, 15, 5,
 7, 1, 5, 1, 5, 1, 12, 35, 20,

(c)

2, 1, 1, 2, 2, 8, 1, 2, 9, 2, 5, 1, 2, 7, 14,
 2, 1, 8, 4, 3, 1, 1, 20, 61, 20,
 2, 1, 3, 2, 3, 1, 2, 1, 14, 16, 4, 2, 1,
 1, 4, 1, 1, 5,
 1, 1, 2, 1, 1, 4, 7, 1, 2, 1, 1, 3, 3, 11, 10, 3, 3,
 2, 1, 3, 1, 5, 1,
 1, 1, 1, 1, 10, 9,
 2, 2, 3, 2, 7, 1, 3, 1, 1, 1, 6, 11, 5, 7, 5,
 6, 1, 5, 1, 5, 1, 1, 11, 35, 20,
 1, 1, 1, 1, 2, 2, 3, 2, 2, 2, 5, 4, 4,
 1, 4, 1, 1, 2, 1, 10, 40, 16,
 1, 1, 1, 1, 2, 1, 2, 1, 2, 2, 5, 2, 5,
 1, 1, 1, 5,

Table 4.4. Continued

(d)
<u>1</u> , <u>1</u> , <u>1</u> , <u>3</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>3</u> , <u>4</u> , <u>4</u> , <u>5</u> , <u>2</u> ,
<u>1</u> , <u>1</u> , <u>1</u> , <u>3</u> , <u>1</u> ,
<u>1</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>2</u> , <u>1</u> , <u>3</u> , <u>1</u> , <u>4</u> , <u>8</u> , <u>3</u> , <u>3</u> , <u>3</u> ,
<u>5</u> , <u>1</u> , <u>3</u> , <u>1</u> , <u>3</u> , <u>1</u> , <u>10</u> , <u>30</u> , <u>10</u> ,
<u>1</u> , <u>2</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>3</u> , <u>5</u> , <u>1</u> , <u>1</u> ,
<u>1</u> , <u>2</u> , <u>1</u> , <u>3</u> ,
<u>1</u> , <u>1</u> , <u>2</u> , <u>1</u> , <u>3</u> , <u>2</u> , <u>4</u> , <u>4</u> , <u>1</u> , <u>3</u> ,
<u>1</u> , <u>3</u> , <u>1</u> ,
<u>1</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>3</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>6</u> , <u>4</u> , <u>7</u> , <u>5</u> ,
<u>4</u> , <u>1</u> , <u>3</u> + <u>1</u> , <u>1</u> , <u>2</u> , <u>10</u> , <u>1</u> , <u>30</u> , <u>2</u> , <u>10</u> , <u>1</u> ,
<u>1</u> , <u>1</u> , <u>1</u> , <u>1</u> , <u>2</u> , <u>3</u> , <u>3</u> ,
<u>1</u> , <u>3</u> , <u>1</u> , <u>2</u> , <u>3</u> , <u>20</u> , <u>7</u> ,
<u>1</u> , <u>1</u> , <u>1</u> ,
<u>4</u> , <u>4</u> ,
<u>2</u> , <u>2</u> , <u>2</u> , <u>1</u> , <u>1</u> ,
<u>1</u> , <u>1</u> ,
<u>1</u> , <u>1</u> , <u>2</u> + <u>1</u>

Note: underlined numbers in (c) match/closely match those recorded on khipus UR9 (plate 1) and UR21 (plate 2).

A drawing displaying schematic representations of khipus UR9 and UR21, as well as the relevant four-month segment of UR6, is shown in figure 4.7. Figure 4.7 contains three columns. These represent, in schematic form, the cords and pendant strings of UR9 (left hand column), UR21 (right hand column), and the approximately four month section of UR6, as defined above (center column). Solid brackets and lines show where there are “exact matches” between numerical values registered in either, or both, UR9 and UR21 and the relevant section of UR6; dotted-line brackets and lines connect “close matches” between or among these khipus (full data on these khipus may be found at <http://khipukamayuk.fas.harvard.edu/DataTables.html>, under “UR Khipu-Leymebamba”)

The similarities between numerical values registered in the three columns are striking. On the basis of these similarities, I argue that UR9 and UR21 represent different versions, drafts, or cross-references of the information contained in the four-month segment of UR6. I should note that I have also studied carefully the pendant attachment and knot directionality patterns on these three cord devices. As far as I have been able to determine thus far, there are not significant correlations or structural patterns among these khipus in terms of these other construction features. Therefore, in what follows, I will focus on the closely matching numerical values registered on khipus UR6, UR9, and UR21.

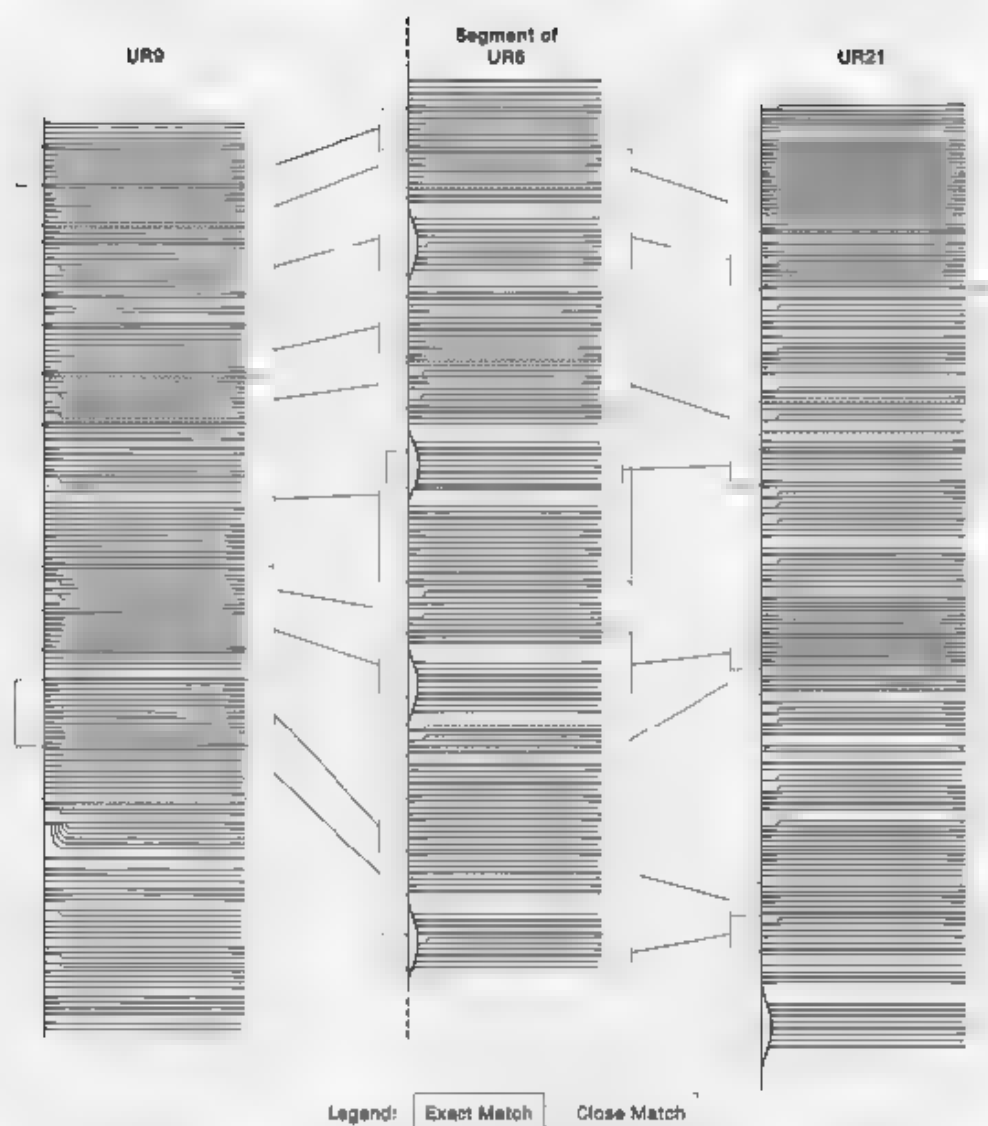


Figure 4.7. Sections of khipu UR6 (*center*) that match/close y match with khipu UR9 (*left*) and khipu UR21 (*right*) (drawing by Julia L. Meyerson; used by permission)

How might this complex set of closely matching numerical values on three different khipus from Laguna de los Cóndores have come into being? And what can this example of closely matching khipu accounts teach us about Inka accounting practices, at least in this far northern region of the empire? I believe that there are two features of this set of matching khipus that we should focus on in order to interpret the types of information recorded on the three and the way the information registered on them may have been compiled, compared, and synthesized.

The first feature that I would stress is that the match between khipus UR9 and UR21 with UR6 involves about a sixth of the data (i.e., four out of twenty-four months) recorded on the large, “summary” khipu, UR6.

I think that the multiple accounts incorporated in *kipus* UR6, UR9, and UR21 should be viewed in relation to, or in the context of, my earlier suggestion that the numerical information tied into the knots of *kipu* UR6 represents an accounting of the tribute workers whose labor obligation to the Inka state was recorded in a two-year calendar. According to this interpretation the two year calendar would have recorded the month-by-month recruitment and distribution of tribute workers (*mitayuq*) in the region of Laguna de los Cóndores in late pre-Hispanic times. I suggest now that the tribute laborers accounted for in this *kipu* calendar were probably organized into *ayllu*-based work groups, similar to what we saw in the Atarco *kipu*, in chapter 3.

Building on this hypothesis, I suggest that UR9 and UR21 represent a pair of accounts of *ayllu* laborers that was retained by two different record keepers who were responsible for recording information pertaining to one or more *ayllus* whose service duty (or duties) fell during the four month period of UR6 in bold type in table 4.4. The two *ayllu*-level *kipu*-keepers who retained *kipus* UR9 and UR21 would have reported the contents of their respective recording devices to a third, probably higher-level, *kipu*-keeper. The latter official would have been responsible for coordinating the accounts that came in to him from the *kipu*-keepers of numerous *ayllus*. All of this information was then synthesized into a single summary accounting: *kipu* UR6.

In fact, I think that enough evidence converges on this set of *kipus* to suggest that UR6 was the actual *kipu* of the headman, [Francisco] Guaman, referenced earlier, the *curaca* principal who provided the earliest census data to the Spaniards. However, this attribution is put into doubt by virtue of the fact that Guaman belonged to an *ayllu* near Cochabamba, and he would probably have been buried there, rather than at Laguna de los Cóndores. As Guaman would almost certainly have been buried with something as important as his *kipu*, this raises a serious question about my identification of UR6 as belonging to this individual. However, given how closely UR6 matches the census data reported by Guaman and recorded by the Spanish, is it possible that UR6 might have been a copy of the one possessed by Guaman? We are unlikely to be able to make a positive determination on this question, given the lack of explicit testimony on the matter.

It is relevant here that accounting in four-month periods was apparently a standard feature of Inka record keeping practices. Such an accounting periodicity is suggested, for instance, in the testimony of Polo de Ondegardo, who says that in Inka times, people delivered their

tribute to Cuzco on three occasions throughout the year; this suggests a 3 × 4-month accounting periodicity (= 12 months)²⁹ Juan de Matienzo notes a similar accounting periodicity in early colonial times as follows:

If any Indian requests something or accuses a principal of something, he cannot do so before the “alcaldes” (mayors), but [he must do it] before the Spanish “Corregidor,” and, if he [the Corregidor] is not available, before the Tucurico [provincial governor], so that he [the Tucurico] puts it in his quipo [khipu] for the record, and every four months he goes with the quipo to the Corregidor in the city, so that he [the latter] expediently does justice about the complaints that he [the Tucurico] brings by the quipo, without having to receive those who made the complaints when these are small things.³⁰

Thus, the fact that khipus UR9 and UR21 recorded some manner of accounting matching of what appears to be a four-month segment of UR6 accords well with what we learn from the chroniclers about Inka and early colonial accounting periodicities and practices.

Conclusions

The important point to stress in conclusion is the coincidence between what I have interpreted as calendrical values and census figures (for tribute payers) on khipu UR6. The crux of my argument is that this was, in fact, a coincidence of numerical values – that is, they were complementary. What I mean by this is that the calendrical organization of (Francisco) Guaman's khipu – or a copy thereof – would have provided the temporal pattern for the organization of mit'a labor service provided to the Inka state in the region prior to the Spanish conquest. The knot count pertaining to each paired set of pendant and loop pendant strings (constituting a one-month period) would have indicated the number of tribute payers that would have been responsible for performing state labor service in the region during one lunar month over the two-year accounting period encoded in the strings and knots of khipu UR6.

While I hope that the interpretation, or hypothesis, offered above has gone at least some way toward explaining how and why khipu UR6 was constructed as it is, I also recognize that there are, in fact, many more new questions raised by this interpretation. These include: If khipu UR6 is a biennial tributary record, then where does the first year begin – at the top or the bottom of the khipu? At what point in the annual cycle does the calendar begin (at one or the other of the solstices? at one or

the other of the equinoxes?)? Why, if this is a two year calendar of the state service that was performed by people in this region, does the record show that twice as many people worked in Year One as worked in Year Two? And finally, why were there such great differences in the numbers of tributaries who worked for the state from one month to the next? I cannot provide convincing answers to any of these questions at the present time. Nonetheless, we are at least asking questions of *kipu* records that have not been asked previously, and some of these questions may help guide our future investigations of the knotted-string records in productive directions and in creative ways.

When descendants of the *mallkis* at Laguna de los Cóndores visited the ancestor-custodians of *kipu* UR6, they would have taken up the *kipu* in order to remind themselves of the proper, ancestor-sanctioned organization of time and the calendar, as well as the “appropriate,” traditional social organization and labor service to the state performed in the past by the people of the region. During pre-Columbian times, these “messages from the *mallkis*” would have been of immediate relevance for the people living then, as a record of their labor service obligations to the Inka state. After the Spanish conquest, the accounting of time and sociopolitical organization contained in *kipu* UR6 together with UR9 and U21 would have served the people of the region as a set of historical documents against which to measure and evaluate changes that had occurred in their world since the beginning of Spanish domination in the region.

Extraordinarily, we have access to this same collection of *kipus* today, on the basis of which we may begin to undertake (as I have done here) to construct a version of the social history of populations around Laguna de los Cóndores just before and after the Spanish conquest of Chachapoyas. In this construction there is an emphasis on organizational structures, especially dualism (e.g., paired year counts; paired cord units [21 + 9]; paired material culture [e.g., the *keros*]), similar to those that emerged in the analysis of the Atarco *kipu* in chapter 3. Thus, there begins to emerge *from the kipu sources* an outline of a set of core structures and organizational principles that gave meaning and coherence not only to Inka society but to its representations in history.

Constructing the Records of the Palace of Puruchuco, Lima Valley

Scholars of Inka civilization have long wondered how information moved between levels of the decimal hierarchical administration. The *kipus* from Laguna de los Cóndores (chapter 4) show how such a process may have taken place: two *kipus* (UR9 and UR21), containing more or less identical information that was probably supplied by lower-level *kipukamayus* were synthesized into a segment of a larger *kipu*, UR6. I argued there that UR6 was probably a summary *kipu*, bringing together information not only from those two sources but from many different, lower-level (i.e., *ayllu*-level?) record keepers for possible dispatch to a higher-level *kipukamayus*, perhaps at the provincial center of Cochabamba.

In this chapter I will explore an example of another far more complex arrangement, what I refer to as an “accounting hierarchy.” In this case, information coming from multiple, lower-level sources has been synthesized into intermediate-level *kipus*, which in turn pass their data on to a final, high-level pair of *kipus*. At least one of the latter pair was probably destined for dispatch to a provincial administrative/accounting center, perhaps one of three located in the Rimac valley, on the central coast of Peru.

The existence of lower-, intermediate-, and higher-level cord keepers raises the question of how the Inkas organized decimal administration and how cord keepers operated within that scheme (see fig. 2.1). These are key questions in our efforts to understand this core institution of Inka political and economic organization. The system, which was built around different groupings of laborers whose numbers increased (going up the hierarchy) or decreased (going down) by multiples or divisors of two and five, was one of the principal contexts within which *kipu*-

keepers interacted with each other, passing vital information on the census, tribute, and other such matters between local communities, regional centers, and the capital, Cuzco.

Recently we have identified a set of *kipus* linked hierarchically in three ranked levels in the kind of reciprocal relationship of summation/partition characteristic of administrative accounting throughout the Inka Empire. This chapter describes and analyses this remarkable set of *kipus*. As with the *kipus* from Atarco and Laguna de los Cóndores, the cord accounts from the central coast discussed in this chapter are vital for informing an understanding not only of Inka accounting practices but also of the substance of history and the nature of power in Tawantinsuyu—of how these bundles of knotted cords actually affected the daily lives of people living in this vast empire. Over some period of time in the distant past, these knotted-cord accounts set people in motion across the Andean landscape, laboring at tasks that served the interests of the Inka and his court in distant Cuzco. The willingness of local people to comply with the tribute demands knotted into *kipus* was the substance—the human actions that constituted the day-to-day realities—of what is otherwise referred to, abstractly, as the hegemony of Inka rule within Tawantinsuyu.

Administration and Accounting in the Señorío of Puruchuco

The archaeological site of Puruchuco is located on the south bank of the Rimac River, about 11.5 kilometers northeast of Lima, in the district of Ate¹ and within the archaeological zone known as Puruchuco-Huacarones.² Before the Inka conquest and occupation of the central coast, the Rimac and the Lurín (the latter of which is the first river valley south of the Rimac) formed the core of a powerful coastal polity known as the Señorío de Ychsma (the kingdom of Ychsma). Puruchuco (as well as Sulco, Huatca, and Malanca) belonged to the *curacazgo* (lordship) of Lati, within the kingdom of Ychsma.³ The most prominent site in the kingdom was the great pilgrimage center of Pachacamac, located near the mouth of the Lurín River (see chapter 6).

The Inkas began moving into the territory of the kingdom of Ychsma in the late fifteenth century AD, probably only some seventy-five years or so before the Spanish invasion in 1532. In addition to building a plaza for the reception of pilgrims, a house of *aqllas* (women working in service to the Inka state) and a magnificent Temple of the Sun,⁴ they also established three installations for administering the populations of the

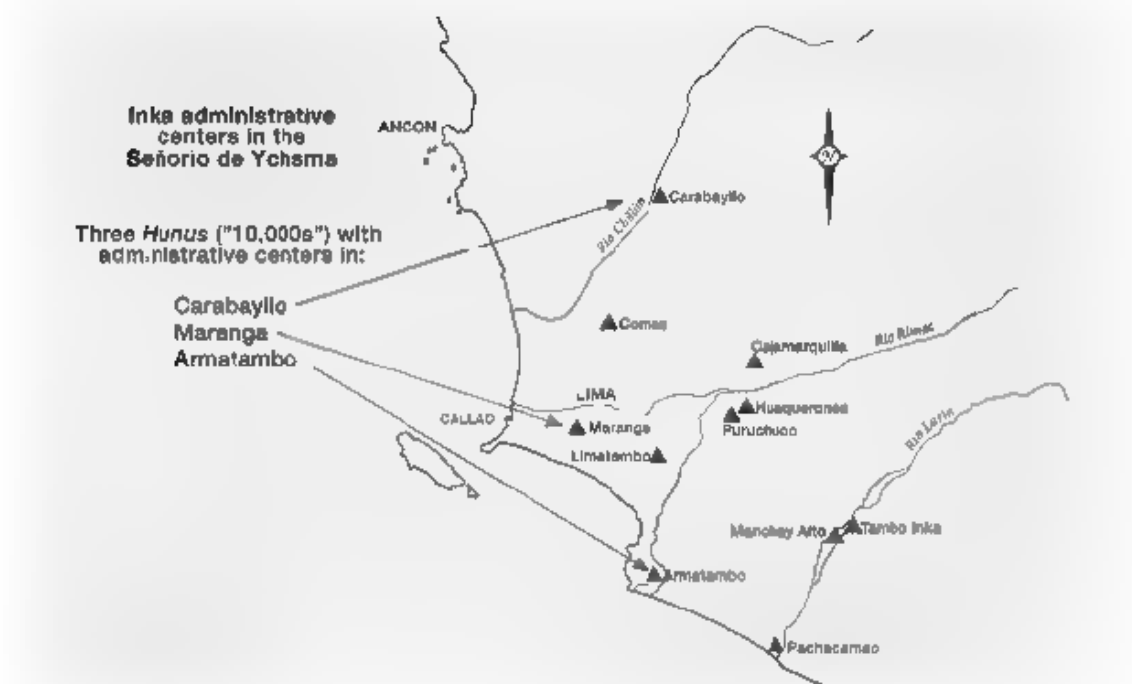


Figure 5.1. Inka administrative centers in the Señorío de Ychsma (drawing by Julia L. Meyerson, used by permission)

former kingdom. The administrative/accounting centers were located at Carabayllo, Maranga, and Armatambo, all within the Rimac valley (fig. 5.1). Each of the administrative centers oversaw a hunu (ten thousand) unit of tribute laborers.⁵ The *kipukamayuchs* of Puruchuco, which was located up valley but still within the coastal plain, probably reported on administrative matters to overseers in one of the three Rimac valley administrative centers (which one remains unknown).

The “palace” of the lord of Puruchuco is a roughly rectangular compound with high surrounding walls of *tapia* (tamped adobe) construction (fig. 5.2). The site is located strategically along one of the first major irrigation canals that comes off the Rimac River, as its main course breaks out of the foothills and onto the coastal plain. Around and in some cases abutted to the palace of Puruchuco were several smaller structures. One of these smaller buildings, located to the north of the main Puruchuco palace, contained a *bunal* (fig. 5.3).

In his excavation of the house and burial in front of the palace in 1964, Alberto Bueno Mendoza came upon a burial chamber containing a large mummy bundle, behind which was an olla (a utilitarian urn with a globular form) with an appliqué serpent on the body; the urn was capped by a gourd (fig. 5.4). Inside the urn Bueno found a *kipu* “archive” composed of twenty-two knotted-cord records (fig. 5.5).⁶ From



Figure 5.2. The palace of Puruchuco (reconstruction, courtesy of Archivo Museo de Sitio Arturo Jiménez Borja-Puruchuco, Ministerio de Cultura, Peru; photograph by Felipe Villacorta)

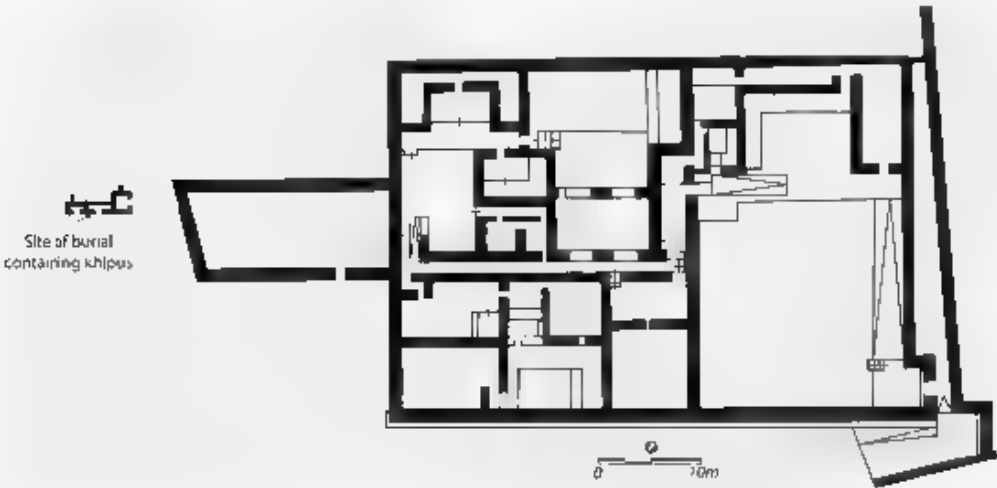


Figure 5.3. The palace of Puruchuco and the associated house and burial (drawing by Carrie J. Brezine; used by permission)



Figure 5.4. The mummy bundle (*above*) and the olla (*overleaf*) in the buria, containing Puruchuco khipu archive (courtesy of Archivo Museo de Sitio Arturo Ménez Borja-Puruchuco, Ministerio de Cultura, Perú; photograph by Felipe Villacorta)





Figure 5.5. The Puruchuco khipu archive with o la (courtesy of Archivo Museo de Sitio Arturo Jiménez Boloja-Puruchuco, Ministerio de Cultura, Peru, photograph by Felipe Villacorta)

the location of the house and its burial, adjacent to the palace, Carol Mackey, who first studied the Puruchuco khipus in the late 1960s, surmised that this building was probably the residence of a khipu-keeper who served the lord of the palace.⁷

The Puruchuco Accounting Hierarchy

What Brezine and I termed in two previous publications the Puruchuco “accounting hierarchy”⁸ pertains to a highly complicated arrangement among seven of the twenty-two khipu specimens found in the urn in the Puruchuco burial. The seven khipus are interrelated in a tiered, hierarchical arrangement of three interconnected levels, designated I, II, and III (from bottom to top) in figure 5.6 Two of the seven khipus (UR63 and UR73) sit at the base of the hierarchy, on level I, three khipus are in the middle, level II (UR64, UR68, and #9 [see below]); and two khipi-

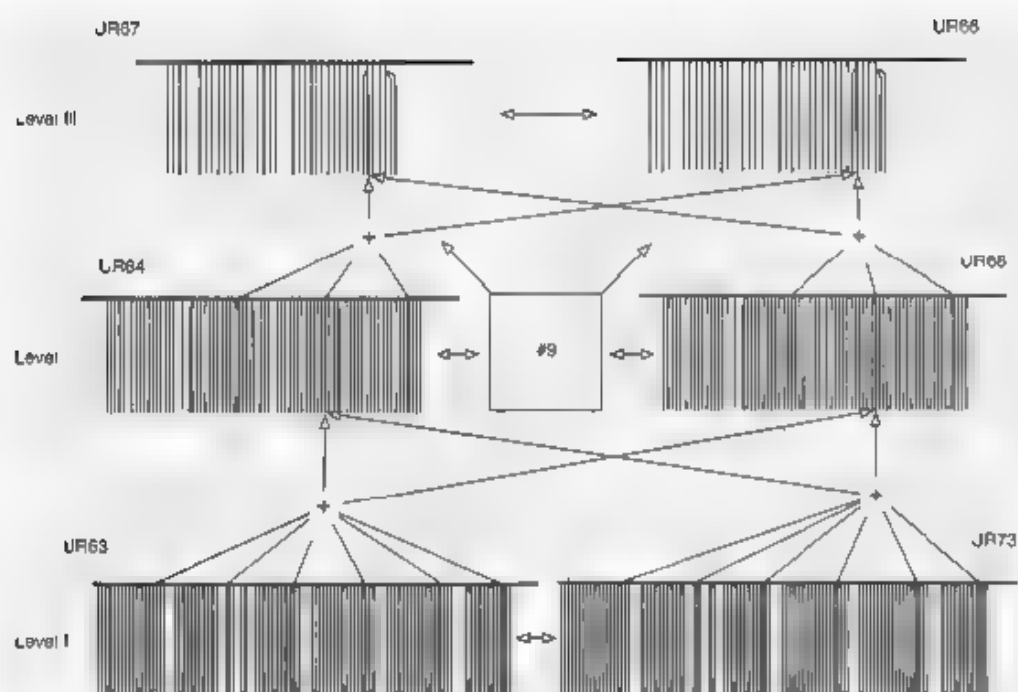


Figure 5.6. The Puruchuco khipu accounting hierarchy (drawing by Carrie J. Brezine, used by permission)

pus (UR67 and UR66) are at the top of the hierarchical arrangement, on level III.

The khipus on the three different levels have different numbers of cords, and the cords are organized in distinct ways. That is, the cords of khipus on level I, at the bottom, are divided spatially into six sections (fig. 5.7), those on level II are divided into three sections (fig. 5.8) plus what Brezine and I have termed an “introductory segment” (see below); and the two examples on level III each consist of just one section of cords (fig. 5.9) plus an introductory segment.

The so-called introductory segments can best be understood by looking at drawings of the two khipus of level III—UR66 and UR67 (plate 3). Twelve cords—counting from the left—of each khipu make up the introductory segments. Only three cords on these introductory segments contain knots, and all of these are figure 8 knots. The three knots are located on the first, seventh, and ninth cords of the twelve-cord introductory segments. This is precisely the arrangement of introductory segments on the three khipus on level II as well. We have argued⁹ that the particular configuration of 12 cords + 3 figure-8 knots on these khipus was something like an “emblem,” or a place identifier, that signaled—in semasiographic (not phonographic) signing—“Puruchuco.” This would have signaled to anyone knowledgeable about khipus in the



Figure 5.7. UR63. level I khipu divided into six sections (author photo, courtesy of Archivo Museo de Sitio Arturo Jiménez Borja-Puruchaco, Ministerio de Cultura, Peru.)



Figure 5.8. JR68. level II khipu divided into three sections (author photo, courtesy of Archivo Museo de Sitio Arturo Jiménez Borja-Puruchaco, Ministerio de Cultura, Peru.)



Figure 5.9. UR66 and UR67: level I I khipus, one section (author photo; courtesy of Archivo Museo de Sitio Arturo Jiménez Borja-Puruchuco, Ministerio de Cultura, Peru)

valley (e.g., a *kipukamayuk* in one of the three Rimac valley administrative centers) that this khipu came from or pertained to the palace of Puruchuco. Presumably, other Puruchuco-like settlements in the valley would have had their own place identifiers, although none have been identified to date.

Finally, as will be seen in detail below, regardless of how many sections the khipus are divided into, the cords of all these khipus are further subdivided (by spacing and color) within their respective section(s) into four-cord groupings organized by what is termed color “seriation.” Seriation refers to a sequence of cords of a repeating series of colors e.g., dark brown, medium brown, light brown, white—repeated multiple times.¹⁰

It should be noted that khipu #9 (on level II) was in the Puruchuco museum when Carol Mackey studied this collection in the late 1960s.¹¹ When Brezine and I restudied the Puruchuco khipu archive in the summer of 2004, khipu #9 was missing from the collection, and the staff of the museum did not know its whereabouts. We did, however, have Carol Mackey’s notes from her earlier study of this item, and that is what allows its information to be included in the accounting hierarchy in figure 5.6

Two features of the information knotted into the seven *kipus* in figure 5.6 justify referring to this array as an “accounting hierarchy.” First, *kipus* on the same level “match,” or closely match, meaning they bear identical or very similar numerical values and color patterning. This probably constituted a checks-and-balances feature of the accounting hierarchy. That is, just like the two Chachapoya *kipus* (UR9 and UR21) that recorded near-identical values whose information was transferred into a four-month segment of *kipu* UR6, as shown in chapter 4, so too do *kipus* on the same level of the Puruchuco accounting hierarchy contain near-identical numerical values and cord organization. These records were probably kept by different *kipukamayus*, perhaps each with an allegiance to a specific social group (e.g., a moiety or *ayllu*), or authority, in the area.

Second, values knotted onto *kipus* sum upward through the hierarchy and/or they are subdivided, or partitioned downward. More specifically, the sums of numerical values recorded on certain groupings of strings (to be defined below) on the two *kipus* on level I are recorded on the middle section of the three-section *kipu* on level II. Similarly, the sums of numerical values in the three sections of the three *kipus* on level II are recorded on the two *kipus* on level III. Or, moving downward, we can say that large values on strings at higher levels are partitioned into smaller values distributed among groupings of strings on the next-lower level. In other words, large numbers on level III *kipus* are subdivided down to smaller sums on level II *kipus*; the latter in turn are subdivided down to the even smaller sums on level I *kipus*. This complicated set of numerical arrangements will become clear as I proceed with the explanation of the accounting hierarchy.

To describe more specifically the summation and/or partitioning of information between these *kipus*, I will examine an example of summation upward, between levels I and II. *Kipu* UR73, on level I, is broken, and therefore incomplete; it bears only 69 of what I surmise were originally about 111 pendant strings. Therefore, I will focus here not on UR73 but rather on UR63 as the exemplary *kipu* from level I. We will look at its summation relationship to the middle section of UR68, on level II (fig. 5.10).

UR63 is organized by spacing and color seriation into six pendant string groupings. The number of strings in each group is shown in brackets at the bottom of each of the six columns in figure 5.10. The me-

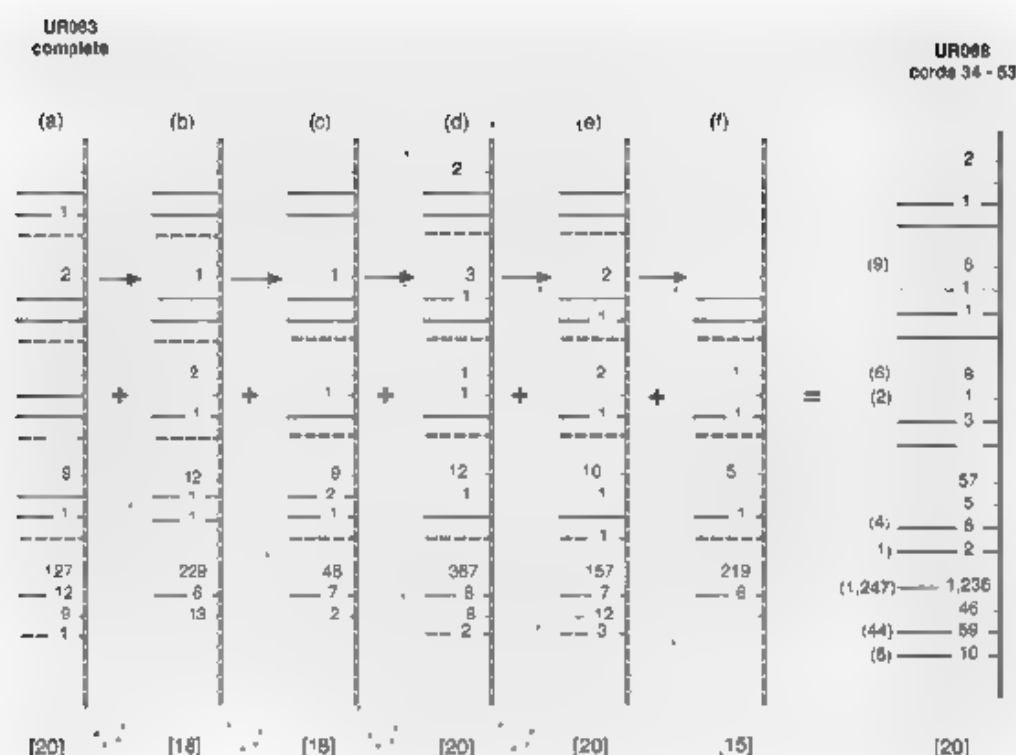


Figure 5.10. Level I khipu UR63 (left) sums to the middle section of level II khipu UR68 (right) (drawing by Carrie J. Brezine, used by permission)

aligning dotted lines at the tops and bottoms of the columns of UR63, in figure 5.10, show how this sample is to be reassembled into the full linear arrangement of this khipu. The numerical values of string groupings in UR63 sum to values recorded on the middle of the three segments of level II khipu UR68 (fig. 5.10, right column).

In figure 5.10 the four-cord color senated strings of UR63 are aligned with each other across the six segments. These groupings are aligned with the similarly color senated grouping of (5 x 4 =) 20 strings in the central subdivision (strings #34 - #53) of khipu UR68. Summing across the aligned strings of UR63 results in sums equal or close to those recorded on the middle (i.e., depicted) section of UR68. The values knotted into the cords of UR68 are reported on the right, any number between parentheses immediately to the left of these is what the values on the strings of UR63 at that position ought to total. The parenthetical numbers represent values that should have been recorded if the relationship between UR63 and UR68 was a matter of strict addition. As we see, most of the summations are only close to the correct values.

Was actual "summation" intended between the six sections of UR63 and the central section of UR68? Rather than rejecting outright the possibility that summation was "generally" intended, I argue that at the

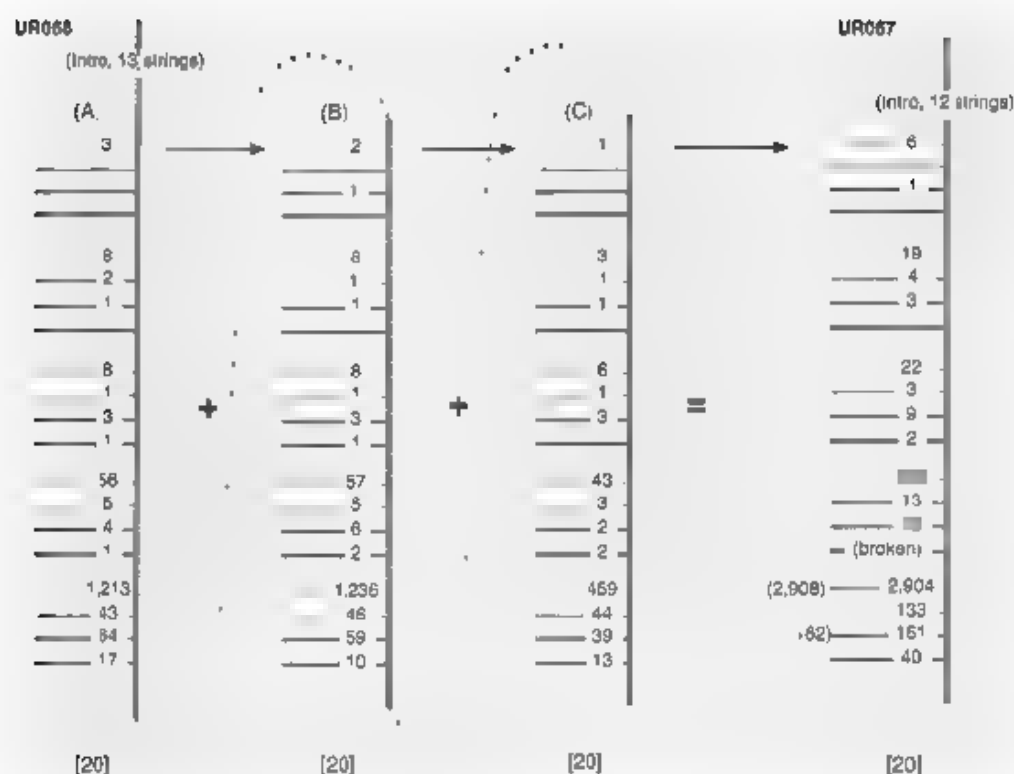


Figure 5.11. Three sections of level I khipu UR68 (left) sum to values on level I khipu UR67 (right) (drawing by Carrie J. Brezine; used by permission)

lowest level of this accounting hierarchy there was a considerable degree of flexibility or variance allowed in the accounting relationship between these two levels of recorded information. Most likely this relates to the kind of ambiguity, noise, or “fuzziness” that often characterizes accounting at a local, unofficial level. As we will see, the calculations and recorded values between khipus become more exact at the top of the hierarchy—that is, in the case of the two khipus (UR66 and UR67) on level III. I would say that what we are viewing here is a situation in which the level I khipus were meant to be viewed for local purposes, inside Puruchuco, whereas at least one of the pair of khipus on level III was intended to be sent outside Puruchuco, to be inspected by overseers.¹² I will show below that the calculations become much more precise in the summation relationship between level II and level III khipus.

Before I continue with the explanation of the summing of values within the accounting hierarchy, a word should be said about the fact that the six sections of khipus on level I sum the values only in the *middle* sections of khipus on level II. As noted earlier, level II khipus are organized into three sections of cords, plus an introductory segment. If the two level I khipus shown in figure 5.6 only sum to the middle of the

three sections of cords on level II khipus, where did the values for the other two sections of level II khipus come from? I suggest below that the two other sections of the level II khipus must have received their values each from a pair of khipus (like the pair that sum to the middle section), which were not found in the urn with the rest of the archive. These khipus must be lost. I return to this point below.

Continuing the summing upwards, consider next the relationship between UR68 (level II) and UR67 (level III), illustrated in figure 5.11, where UR68 is disassembled into its three, color-seriated subdivisions, which are shown aligned with the similarly color-seriated string groupings of khipu UR67. The summations between UR68 and UR67 – i.e., adding aligned values horizontally from UR68 across to the aligned cord on UR67 – are more exact than those between UR63 and UR68. Setting aside the broken string in UR67, the values diverge in only two instances, and in each case the discrepancies are small: 2,904 instead of 2,908 and 161 instead of 162. The high degree of variance (or “noise”) present in the connection between levels I and II has been considerably reduced between levels II and III.

The above description of arithmetic relations within the accounting hierarchy at Puruchuco demonstrates that these khipus registered information collected from various sources that were ultimately synthesized into a pair of final, authoritative khipus (i.e., on level III). One of these “final draft” khipus may have stayed at Puruchuco, for local reference, while the other was dispatched to one of the three Inka administrative/accounting centers in the Rimac valley. On the other hand, since both level III khipus were found in an urn in the grave of a (presumed) khipukamayuk, perhaps both of these accounts were drafts that were meant to stay at Puruchuco and a copy was sent to one of the administrative centers – where it remains today, potentially to be discovered by an archaeologist in the future.

As noted, it appears that the Puruchuco archive is missing four level I khipus. These would have served as the sources (two per section) for the two sections of level II khipus not accounted for in the existing archive. Thus, at one time, there must have been four additional level I khipus that contained the information eventually recorded in the two additional subunits in level II khipus. A reconstruction of the total accounting hierarchy from Puruchuco is shown in figure 5.12. One of these (lost?) pairs would have summed to the left-most subunits on level II (summing 1,212/3), while the other pair would have produced sums recorded in the subunits to the right of the center section (summing 459).

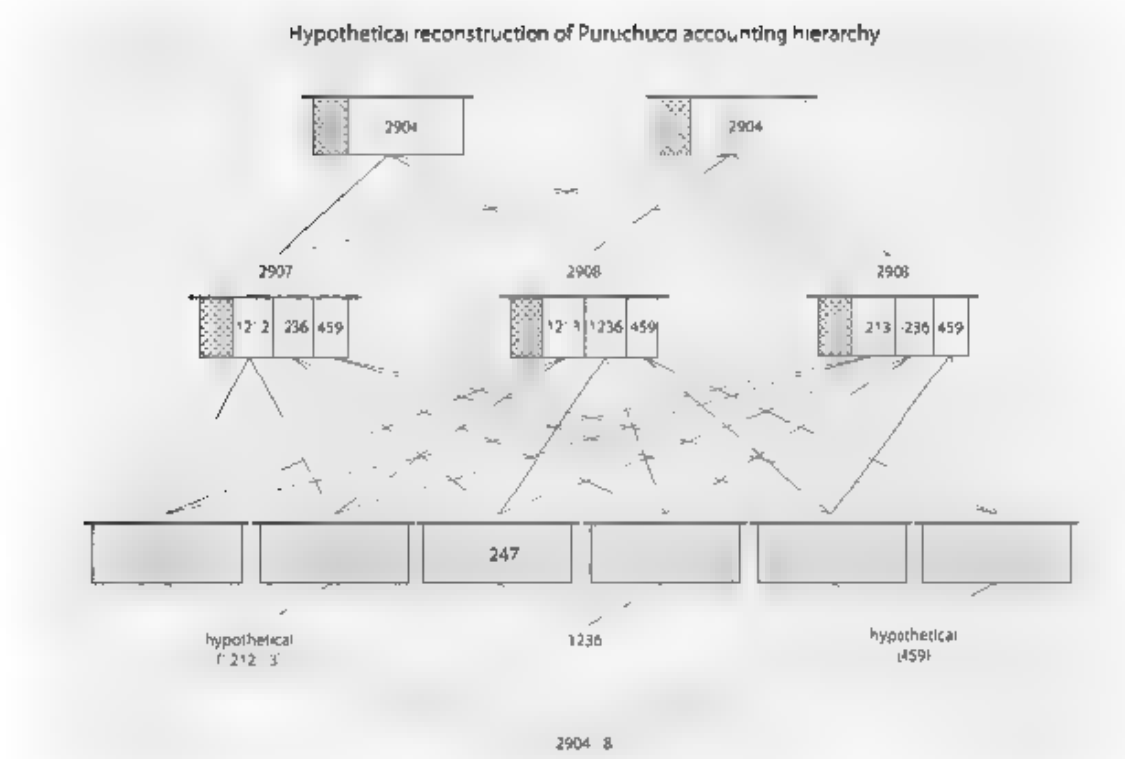


Figure 5.12. Reconstruction of hypothetical complete Puruchuco accounting hierarchy (drawing by Julia L. Meyerson, used by permission)

Except for the introductory segments, all strings on level III khipus are involved in the summation relationship

Conclusions

It appears that the original structure of the Puruchuco accounting hierarchy contained six paired khipus on level I, whose values were summed to produce those recorded on the three subunits of the three khipus on level II, whose subunits, in turn, were summed and recorded on the two khipus on level III. Thus, information was either being funneled or synthesized upward within this hierarchy or alternatively, information was subdivided and distributed downward among the three levels of khipus. I think that the Puruchuco accounting hierarchy represented a set of records that was consulted both inside and outside the local community, at an Inka provincial administrative center

The knipukamayusqs of Puruchuco probably reported to the head cord keepers in one of the Inka administrative centers in the Rimac valley. Khipus on level III, for instance, represented either a set of instructions that was sent to the lord of Puruchuco from one of the administrative centers and required some kind of attention from the palace, or reports

on local Puruchuco resources or activities that had been prepared for dispatch to an accounting center. In either of these scenarios, the khipus would have to indicate their destination or origin. If numerous khipus were coming into a central archive for storage, or were being dispersed from that archive to disparate places, it would have been helpful, if not essential, to have place identifiers encoded within each khipu. I think that the introductory segments on level II and III khipus at Puruchuco, with their particular arrangement of twelve cords, three of which carried figure-eight knots on certain cords, identified these cord devices—in semasiographic signs—as pertaining to “Puruchuco.”

The accounting hierarchy described above—and that exists today only as a collection of disparate khipus in the Puruchuco site museum—is in the end a static collection of Inka knotted-cord records. In the past, however, these cord documents were active, vital players in the political economy of the coastal plain of the Rimac River valley, directing the movement of goods, resources, and/or people to or from the palace of Puruchuco. As such, these khipus may be viewed as historical documents detailing actions that transpired at some moment in time at this particular place within the grand and complex network of inhabited sites within Tawantinsuyu.

Accounting for the Oracle

RECORD KEEPING AT PACHACAMAC, LURÍN VALLEY

What is now the archaeological site of Pachacamac was once a pilgrimage center and home to one of the most powerful and renowned oracles of pre Columbian times in the central Andes. The site's former status has long been recognized by archaeologists, beginning with the earliest excavations there by the German scholar Max Uhle.¹ While scholars continue to debate whether Pachacamac experienced a significant Wari occupation during the Middle Horizon period (AD 600–1000), a wealth of evidence attests the site's importance as a pilgrimage center from at least the Late Intermediate period (AD 1000–1450) through the period of Inka control, during the Late Horizon (AD 1450–1532; see fig. 6.1).²

Located at the mouth of the Lurín River valley, Pachacamac and a host of sites in the nearby Rimac valley (including Puruchuco, on which see chapter 5), just to the north of the Lurín valley, formed the heartland of the Señorío de Ychsma, a powerful kingdom or chiefdom-level polity whose total territorial expanse is still in dispute (see fig. 6.2).³ Pachacamac was home to the most powerful oracle on the coast and throughout much of the highlands of what is today central Peru. Pilgrims came from afar to visit the oracle, to query this powerful seer, and to deposit gifts—perhaps considered as payment for help or insight into future events—with the priests who attended the oracle and who managed activities at the site.

The Inkas began moving into the territory of the Kingdom of Ychsma in the mid fifteenth century AD, probably only some seventy five years or so before the Spanish invasion. The Inkas built and maintained a number of important buildings at the site, including a plaza for the reception of pilgrims, a house of *aqllas* (women working in service to the Inka state), and a magnificent Temple of the Sun (see fig. 6.3).⁴



Figure 6.1. The four regions of Tawantinsuyu and the Señorío de Ychsma (drawing by Julia L. Meyerson; used by permission)

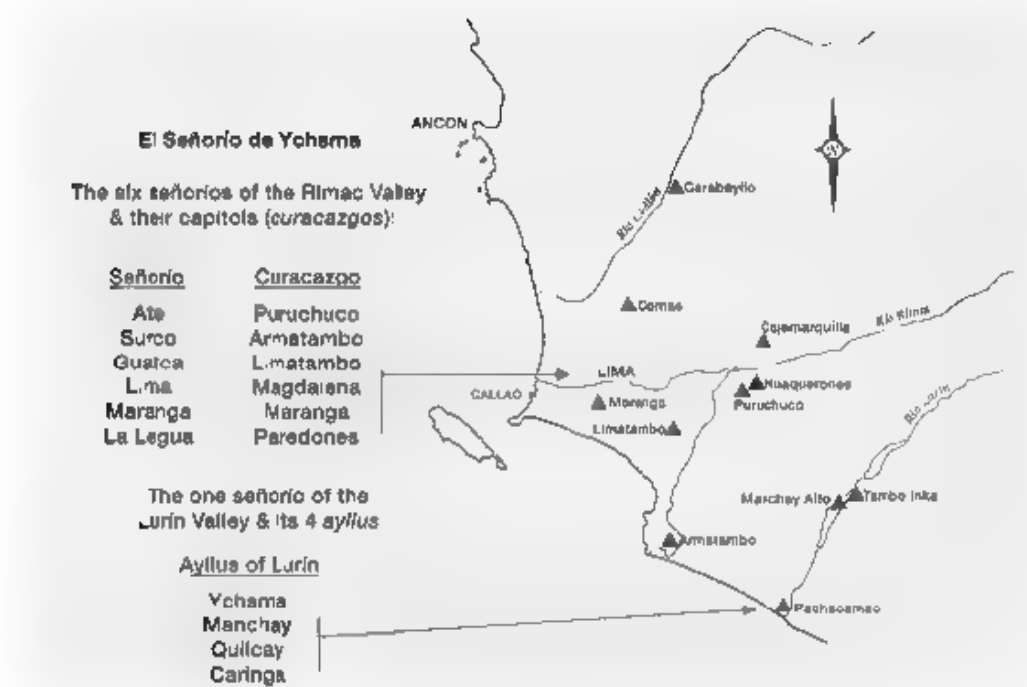


Figure 6.2. Local lordships (señoríos), curacazgos, and ayllus of the Señorío de Ychsma, central coast of Peru (drawing by Julia L. Meyerson; used by permission)

Pachacamac occupies an important and unique position in the late pre-Hispanic history of the *khipu*. Although only a handful of studies record the excavation of *khipus* recovered at Pachacamac (see below),⁵ this site is in fact the most common provenience of the some 923 *khipu* recorded in the inventory of the *Khipu Database* project (see the appendix to this chapter). A total of ninety-one *khipu* samples have a findspot at Pachacamac (fig. 6.4). As Pachacamac is the source of around one-tenth of all known *khipu* samples, one must ask: What was going on during the Inka occupation of Pachacamac that called for such an extraordinary level of accounting, control, and record keeping? And what can be learned about the art of Inka record keeping from the large collection of samples found at the site?

Study of the *khipus* at Pachacamac offers unique opportunities as well as challenges. On the one hand, there is a high degree of variation in the structures, color, cord groupings, and other features of the *khipu* corpus found here as compared to other local collections. It is likely that this great variation was linked to the status of Pachacamac as a great pilgrimage center, a place that attracted adherents bearing offerings—in addition to their own *khipus*—from near and far around the central Andean region. This probably accounts not only for the large quantity of *khipus* found there, but also for their variability and diversity. Because



Figure 6.3. Pachacamac: site plan (courtesy of Peter Eeckhout)

Pachacamac became a central depository of cord records produced in different regions around Tawantinsuyu, the corpus found there is of extraordinary importance for the perspective it provides on at least one principal setting for the standardization of cord construction and sign conventionality in imperial cord keeping, as well as the degree to which those qualities were achieved

At the same time, and for much the same reason (i.e., because *quipus* were being brought to Pachacamac from afar), the samples from this site present a challenge for analysis and interpretation. If it is true that many of these samples did not have a direct connection with Pachacamac as their place of production (as was the case with the local col-

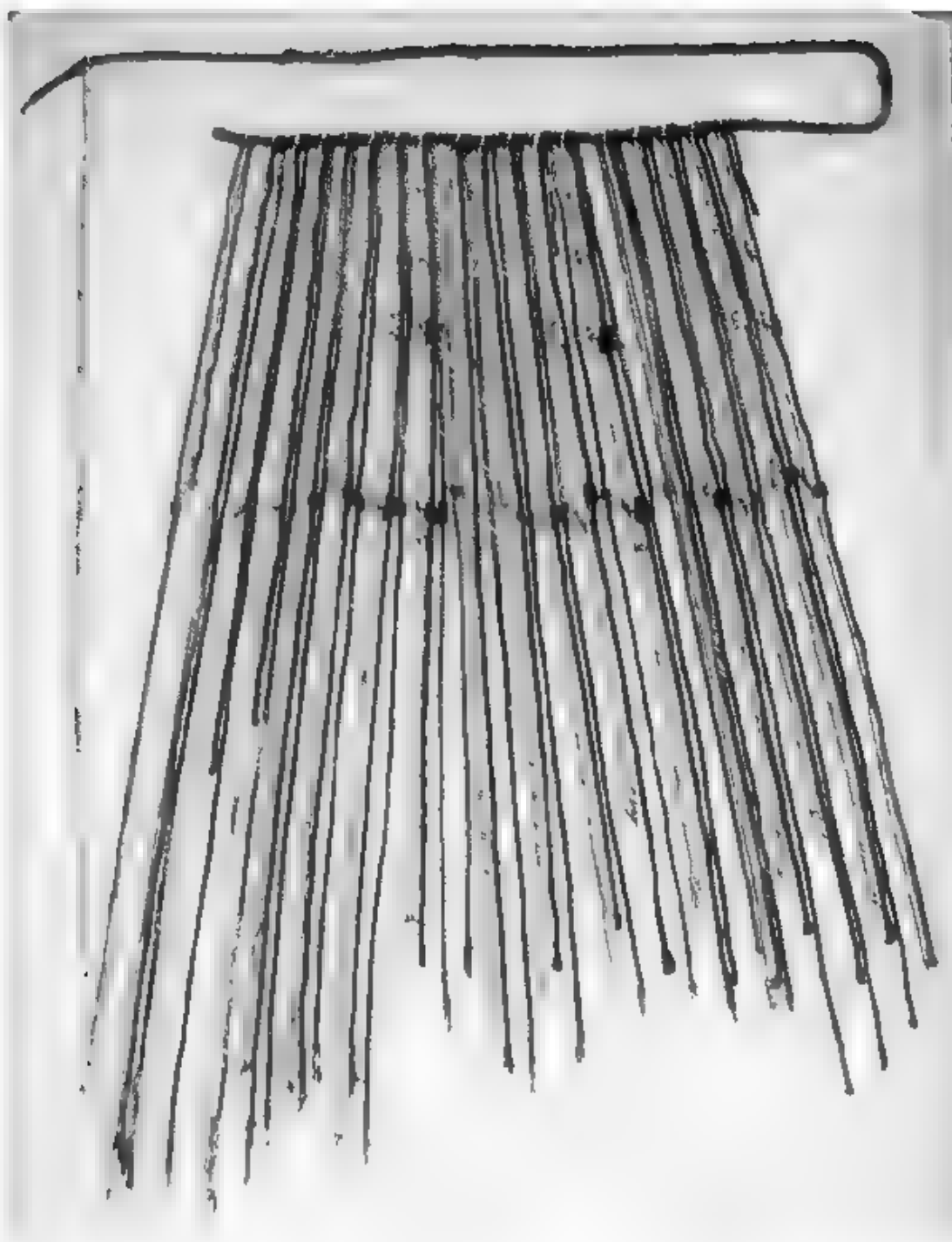


Figure 6.4. Pachacamac khipu RN5644 (courtesy of Denise Pozzi-Escot, director, Pachacamac site museum, photograph by Rommel Angeles)

lections found at Atarco, Laguna de los Cóndores, and Puruchuco), there follows the question of where they were produced and whether their characteristics are necessarily indicative of a central coastal production tradition (e.g., as opposed to a connection with the north or south coast or the highlands). Thus, while we refer to them as “Pachacamac khipus,” as that is the site where they were recovered, and while they may in fact have been produced with an intended deposition in Pachacamac, we

should bear in mind that these samples could have many different sites of origin around the empire.

Pachacamac Khipu Studies to Date

There have been several notable contributions to khipu studies centering on Pachacamac. The most important is that by Hugo Pereyra (2006), who produced an excellent study of the khipus housed in the Pachacamac site museum. In addition, there have been two major discoveries of scientifically excavated khipus in different sectors of the site. This is a rare occurrence, as most khipu samples in museums were plundered and sold on the illegal antiquities market, eventually making their way into museum or private collections by sale, gift, or other means. I begin this summary of the Pachacamac corpus with descriptions of the two major excavated sets of khipus before providing an overview of the full khipu corpus.

A Bundle of khipus in a Deerskin Pouch

The first well-documented discovery and excavation of a set of khipus was led in 1976 by the Peruvian archaeologist Alberto Bueno Mendoza (1990). While clearing structures before the construction of a tourist access road along the south side of Pachacamac, Bueno and his crew discovered a square enclosure made of a few low courses of adobe bricks and covered with earth and sand. In the center of the small structure Bueno found a packet made of the hide of a young deer (he does not identify the species of deer) that contained khipus and other objects (fig. 6.5).

The small structure where the packet was found is located just to the east and downhill from the ruins of a houselike building that was subsequently given the name Casa del Kipu (House of the Khipu; see Bueno's drawing of the structure in fig. 6.6 and its current state in fig. 6.7).

Inside the deerskin packet, Bueno found the following items: nine rolled (i.e., bound in spiral form) khipus, two khipu fragments, twenty-five loose khipu cords, two complete valves of marine shells and three fragments of the "thorny oyster" shell (*Spondylus princeps*), and two small (unidentified) marine shells. The khipus were in relatively good condition. (Several of the khipus were mounted and are presently on display in the Pachacamac site museum.) One of the khipus, bearing a tassel at one end, is shown in plate 4. Close inspection of the tiered placement of knot groups on this sample reveals that values are recorded into the

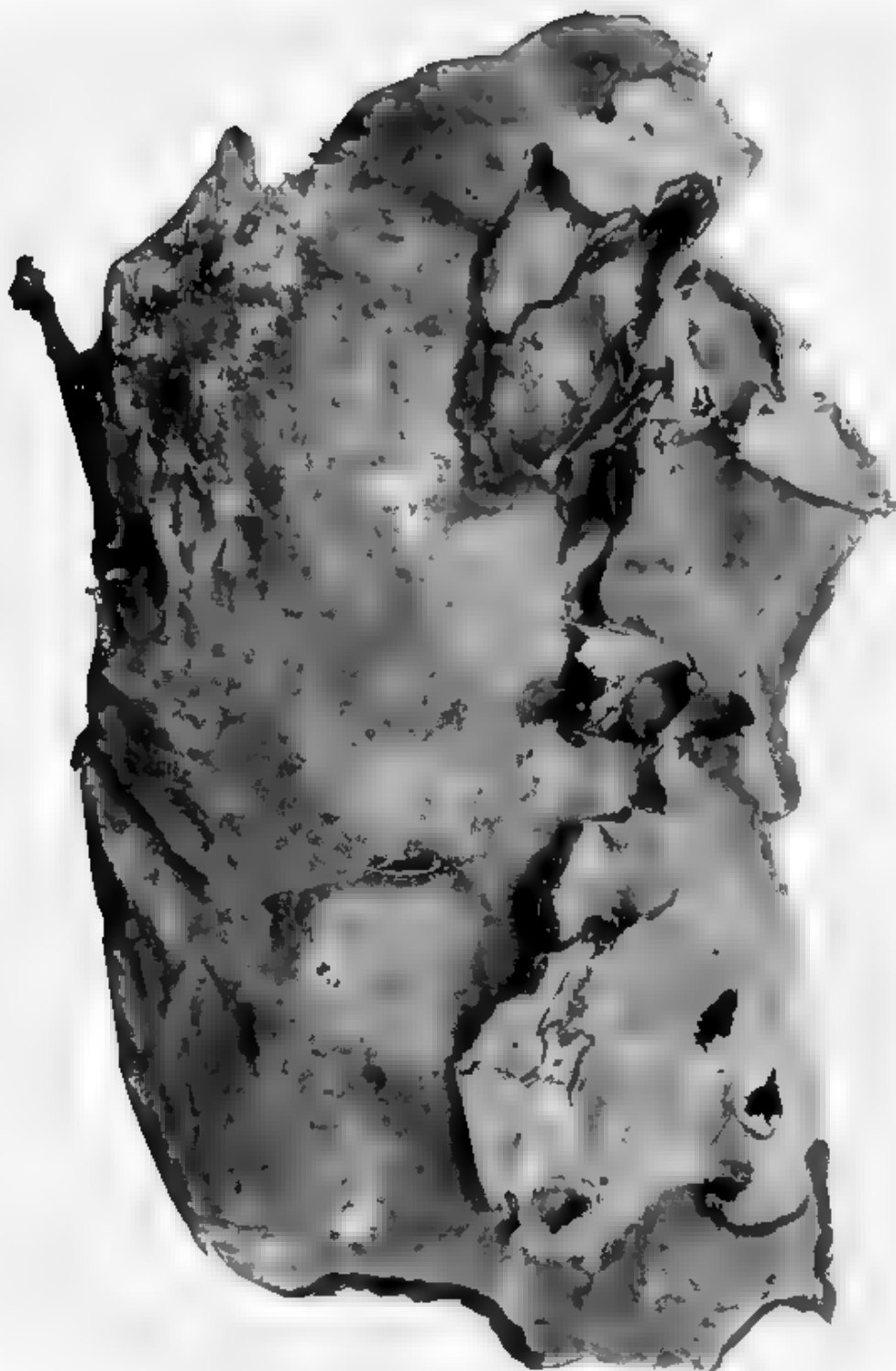


Figure 6.5. Deerskin packet containing khipus, from Pachacamac (courtesy of Denise Pozzi-Escot, director, Pachacamac site museum; photograph by Romme Angeles)

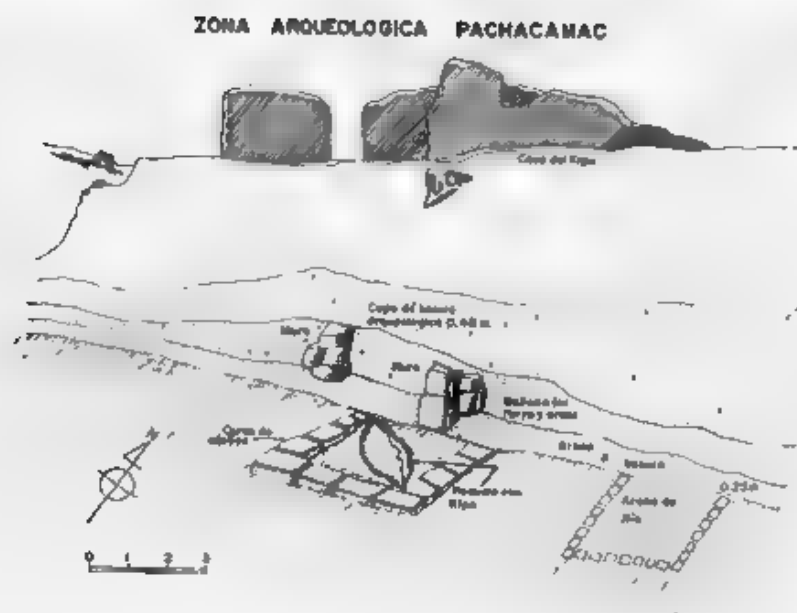


Figure 6.6. The deerskin packet khipu deposit below the Casa del Kipu (after Bueno Mendoza 1990:99, lamina B)



Figure 6.7. The ruins of the Casa del Kipu today (author photo)



Figure 6.8. Pachacamac khipu RN81679 from deerskin packet, and detail (courtesy of Denise Pozzi-Escot, director, Pachacamac site museum; photograph by Rommel Angeles)

thousands; clearly, a large quantity of items were being accounted for by this khipu. Unfortunately, precisely *what* was being accounted for cannot be determined at present.

The khipus and other items were wrapped up in a net inside the deerskin packet. From the disposition of the deerskin bag, which showed signs of a not entirely successful attempt to secure the opening of the skin bag with maguey fibers, Bueno concluded that whoever was in possession of this bundle must have worked rapidly to close and dispose of it, as though it was being hidden away⁶ Bueno does not speculate as to why someone might have attempted to secure and stash the packet so rapidly. Two other khipus from the deerskin bag are shown in plate 5 and figure 6.8

What is the possible significance of this set of *kipus* and the presence of *Spondylus* shell fragments in the packet? *Spondylus*, especially in the form of finely ground powder (*mullu*), was among the most sacred items included in ritual offerings in the pre-Columbian Andean world.⁷ The association of *kipus* with *Spondylus* shells here suggests that these particular accounts were of considerable sacred and/or ceremonial significance. In fact, the Casa del Kipu is located relatively close to a number of ritual and ceremonial structures, including ruins known as the Old Temple, the Painted Temple, and the Temple of the Sun, it is not far from the Plaza of Pilgrims. These were presumably some of the principal sites where goods would have been unloaded (from llama caravans), deposited, and accounted for by the local cord keepers before being stored or perhaps put immediately to use in ceremonial activities at the site.

As for the cultural affiliation of the deerskin bundle of *kipus*, Bueno found numerous sherds of Cuzco-style polychrome pottery as well as Late Horizon incised black wares scattered around the House of the Kipu. These ceramics, as well as the *kipus* themselves—Inka accounting instruments *par excellence*—were interpreted by Bueno as indicating that this area of Pachacamac was of particular importance to the Inka during their late pre-Hispanic occupation of the site.⁸

Evidence Linking Storage and Accounting

The connection between cord keeping and storage at Pachacamac was remarked on by the earliest Spanish visitors. When Hernando Pizarro, brother of the conquistador and first governor of Peru, Francisco Pizarro, visited the great pilgrimage center in 1533, just a few months after the Spanish defeat of the Inka troops at Cajamarca, he and his soldiers removed several items from one of the storehouses located along the royal road that passed through Pachacamac. Hernando Pizarro noted that when he and his men took the items—firewood, “sheep” (llamas), maize, and *chicha* (maize beer)—the record keepers at the storehouse “untied some of the knots which they had in the deposits section [of the *kipu*], and they [re-]tied them in another section [of the *kipu*].”⁹ Clearly, then, *kipukamayus* were keeping cord accounts of what came into and went out of the storehouses.

There is a difference between accounting related to goods kept in storehouses for religious purposes and accounting in relation to state administrative activities. While state record keeping did involve store-

house accounting (e.g., for the military; see chapter 9), the state accountants were also, if not primarily, concerned with administrative records dealing with censuses and tribute, both of which were linked to the labor draft (*mit'a*) system of Inka tribute (see chapter 4). In their management of state administrative matters within the Rimac and Lurín valleys, the Inkas established administrative/accounting centers at three sites: Carabayllo, Maranga, and Armatambo (see fig. 5.1). Each Rimac valley center oversaw a *hunu* (ten thousand) unit of tribute laborers.¹⁰ There was no *hunu*-level accounting center in the Lurín valley, where Pachacamac is located. Rather, accounting in this area during Inka times appears to have focused on managing the goods going into and out of the religious/ceremonial center of Pachacamac itself. Storehouses at Pachacamac may have been controlled by the state, but it is equally possible that these particular storehouses were the property of the oracle, in which case the accountants there would have been responsible to the resident priests, who oversaw the oracle and its resources.

Belgian archaeologist Peter Eeckhout has recently provided an overview of storehouses and associated *quipus* recovered from different sectors of Pachacamac. This includes the Casa del Kipu collection recovered by Bueno; one sample from Pyramid 3, and another from Pyramid 2, sector 4.¹¹ The Inkas also built storage facilities in the vicinity of the open rectangular area known as the Plaza of Pilgrims, toward the southern end of the site (near the Casa del Kipu), and at a location in the extreme north of the site, now designated Structure E8.¹² Eeckhout argues that the Inkas built the Plaza of Pilgrims "to make the site a pilgrimage center at the imperial level."¹³ The nearby storehouses no doubt underscored Inka efforts to support and promote the Pachacamac oracle empire-wide.

Structure E8 (fig. 6.9) consists of two parts: a large patio and a series of chambers, square in plan, laid out in two parallel rows of ten units each along the south wall of the patio.¹⁴ As Eeckhout notes,¹⁵ this layout is similar to that of contemporaneous structures found on Peru's southern coast, at Tambo Viejo and Quebrada de la Vaca.¹⁶ This architectural arrangement is also seen at the southern coastal site of Inkawasi, where Peruvian archaeologist Alejandro Chu recovered thirty-four well-preserved *quipus* from a large storehouse facility (chapter 9).¹⁷ Clearly, the Inkas developed an efficient infrastructure for moving, storing, and accounting for goods at sites all along the central and southern coast of Peru, and Pachacamac was no exception. Importantly, whereas the other sites mentioned are *tambos* (way stations along the Inka road) or



Figure 6.9. Structure E8 at Pachacamac, reconstruction (photograph and plan courtesy of Peter Eeckhout)

were related to military operations and the control of populations, as well as the movement, accommodation, and provisioning of state administrative officials, the storage/accounting infrastructure at Pachacamac seems to have been primarily related to the reception of pilgrims and their offerings in honor of the great oracle.

In his work at Structure E8, Eeckhout found that there was also a room located to the front of the storehouse units, in the center. When he excavated this front room, he found nine *kipus*, most of which were rolled up in the spiral manner typical for storage in archives (fig. 6.10). Unfortunately, all of these *kipus* were in very poor condition, which made it impossible to open them for further study. Eeckhout also recovered a magnificent wooden *kero* (drinking vessel) with a finely incised maize plant motif carved on the side.

In his interpretation of the excavated room, Eeckhout concluded that “so far as Structure E8 is concerned, the presence of a group of *kipus* . . . , of a decorated wooden *kero*, and the general context, lead to the conclusion that this room was occupied by a functionary who dedicated himself to the administration of the goods that arrived in the building, strategically located at the edge of the monumental zone.”¹⁸ Eeckhout concluded by noting that these finds at Structure E8 point to the significance of ceremonial and religious functions—including feast-

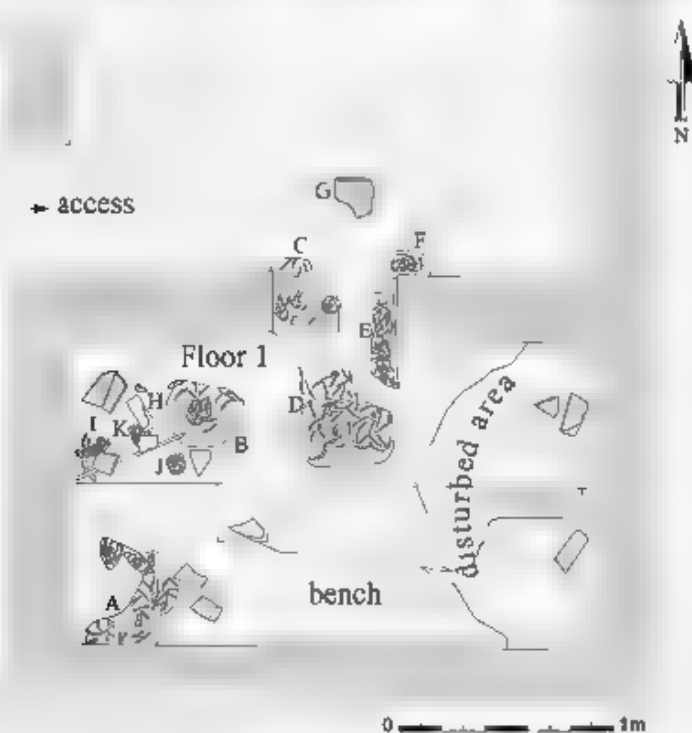
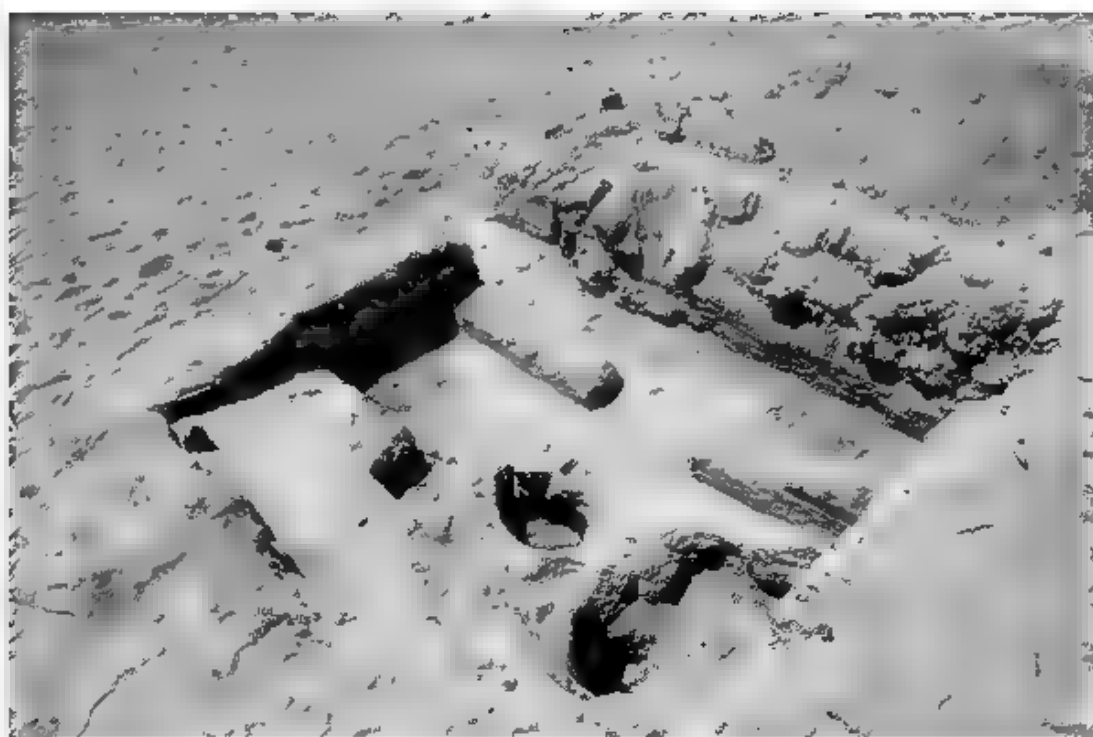


Figure 6.10 Structure E8, with khipu findspots indicated (photograph and plan courtesy of Peter Eeckhout)

ing and the consumption of chicha, which is served in keros (see chapter 7)—at Pachacamac, especially within the Plaza of Pilgrims. It was here, Eeckhout argues, that the Inkas received large processions of pilgrims from around the empire who came to pay respect to the Pachacamac oracle, seeking prophecies and healing for the sick. He suggests that the arrival of so many pilgrims with offerings created the need for substantial infrastructure at this location for unloading llamas, as well as storehouses and accounting devices.¹⁹

In summary, we can conclude that the very large corpus of samples found at different locations around Pachacamac reflects the intention of both officials and pilgrims to keep records of donations, gifts, or payments offered to the oracle. With the realization of this high level of recording activity comes the sense that there must have been a strong notion of “credit” pervading these exchanges. These were not free gifts, given anonymously; rather, there would have been a strong presumption that what was given or paid demanded not just recognition but presumably some form of reciprocity. Whether that was expected to take the form of good fortune, or health, or whatever, we cannot know. But it does suggest that such notions and motives as debit, credit, surveillance, and control pervaded relations and interactions focusing on the oracle. These values represent some of the central features of the “history” that can one day be written in fuller narrative form from the *kipu* records of what transpired at this great ritual and ceremonial center at the time of its encounter with the Inkas.

The Full Pachacamac *Khipu* Corpus

The ninety-one *kipus* from Pachacamac are listed in the appendix to this chapter. The number in the first column on the left is the author’s assignment of numbers to samples. The second column identifies the researcher who studied the sample (e.g., AS = Ascher, HP = Hugo Pereyra; and UR = Urton) and the number of that sample in the oeuvre of that person. The third column shows the complete numerical value registered on that *kipu* in the decimal place-value system of tying tiered knots in *kipu* strings. The dominant color patterning of cords on samples is shown in the fourth column; the length of the sample is in the fifth column; and the museum where the sample is now located is in the last column.

The ninety-one Pachacamac *kipus* vary in their construction. There

is, for instance, a tremendous variation in the length of the primary cords, which ranges from 3.1 cm (a fragment; #60) to 280.5 cm (#70). The average number of cords on *kipus* that have only pendant cords and no subsidiary cords is fifty-two, for *kipus* with pendant strings bearing subsidiaries, the average number of pendant cords is sixty-seven. Sixty-seven percent of the ninety-one samples bear subsidiaries.

The number of cords in cord groupings, or clusters, along primary cords is often an important construction feature of *kipus* (e.g., as we saw with the four-cord color-seriated groups in the Puruchuco *kipu*, in chapter 5). Spatial segregation between groups of cords is also a characteristic to be noted (see fig. 6.11). The most common group size in the Pachacamac corpus is five-cord groups, there are 169 five-cord groups on samples in the corpus. The next most common is three-cord groups (144 instances), then one-cord groups (116 instances), two-cord groups (80 instances), four-cord groups (79 instances), and six-cord groups (74 examples). Thereafter, the frequency of cord groupings falls off considerably (e.g., 45 instances of seven-cord groups, 32 ten-cord groups, 30 nine-cord groups; and down to single occurrences of several variations).

While archives from other locations commonly contain somewhat regular, standard cord-grouping values, this is not the case for the Pachacamac samples. As we saw with the Puruchuco *kipu* discussed in chapter 5, for instance, while *kipus* may display spatial cord groupings in one, three, or six sections, inside those sections there is an almost uniform organization by four color seriated cord grouping. Chapter 12 is an analysis of an archive from the Santa valley in which all samples are divided into six cord color banded groupings. The wide variation in cord groupings values at Pachacamac suggests that these samples derive from several if not many different regional traditions of cord keeping.

In terms of the recording of numerical values on *kipu* cords in the Pachacamac corpus, the total registered in knots on samples varies from a low of 10 (*kipu* no. 9) to a high of 205,515 (*kipu* no. 6; see the appendix to this chapter). The following value distribution charts offer a finer-grained analysis of the distribution of numerical values of different magnitudes. Chart 6.1 shows the total distribution of cord values on all *kipus*, from lowest (0) to highest (200,000+). Chart 6.2 narrows the focus of numerical values recorded on the Pachacamac *kipu*, looking only at *kipus* with values between 0 and 10,000 (the Inka *hunu* administrative unit). These two charts show that, overwhelmingly, the Pachacamac *kipus* record numerical values below 2,000; the majority are below 1,000. The median of all recorded *kipu* values is 1,486, the mean

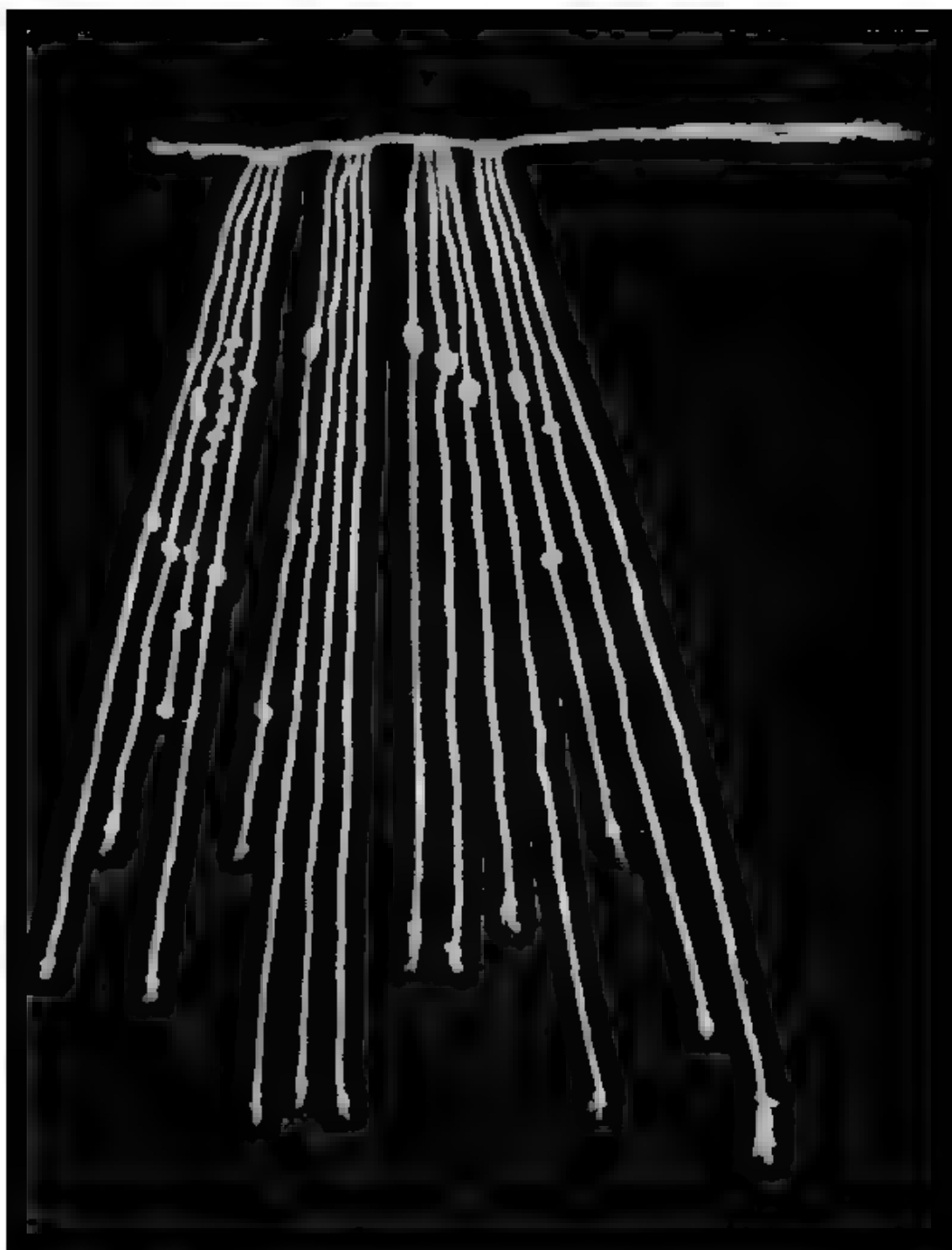


Figure 6.11. Khipu RN83852 (courtesy of Denise Pozzi Escot, director, Pachacamac site museum, photograph by Rommel Angeles)

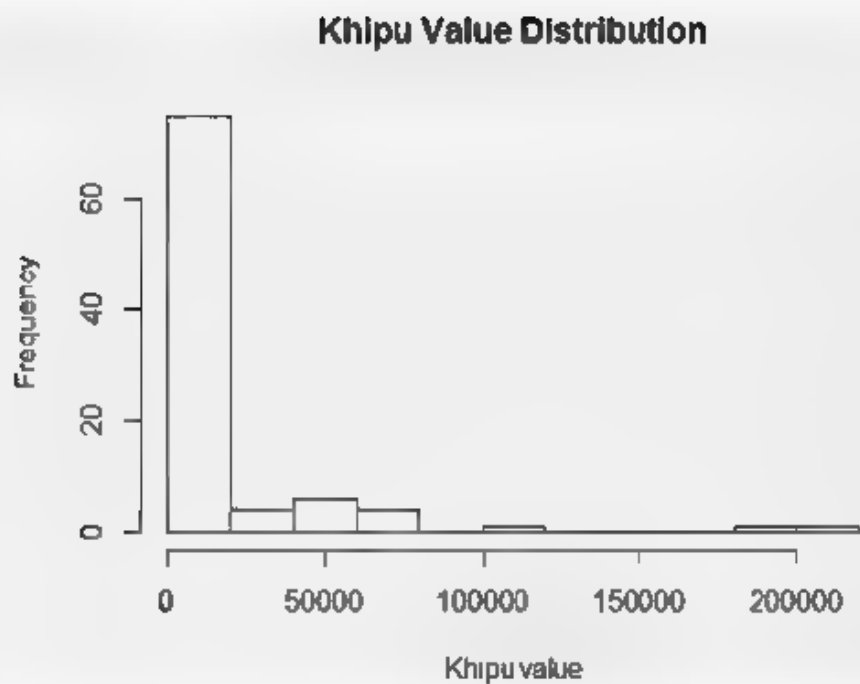


Chart 6.1. Total numerical value distribution on all Pachacamac khpus

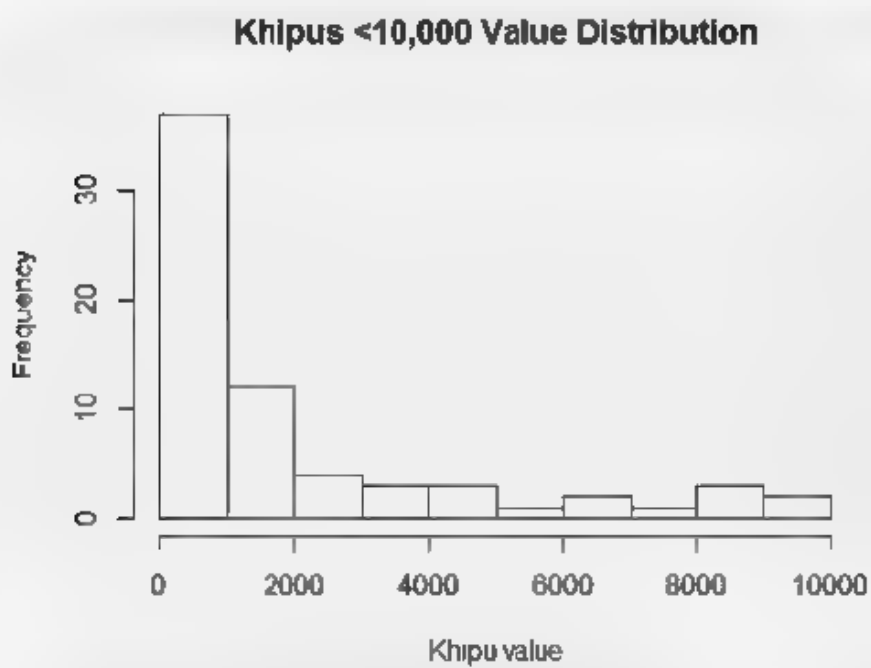


Chart 6.2. Pachacamac khpus with numerical values less than 10,000

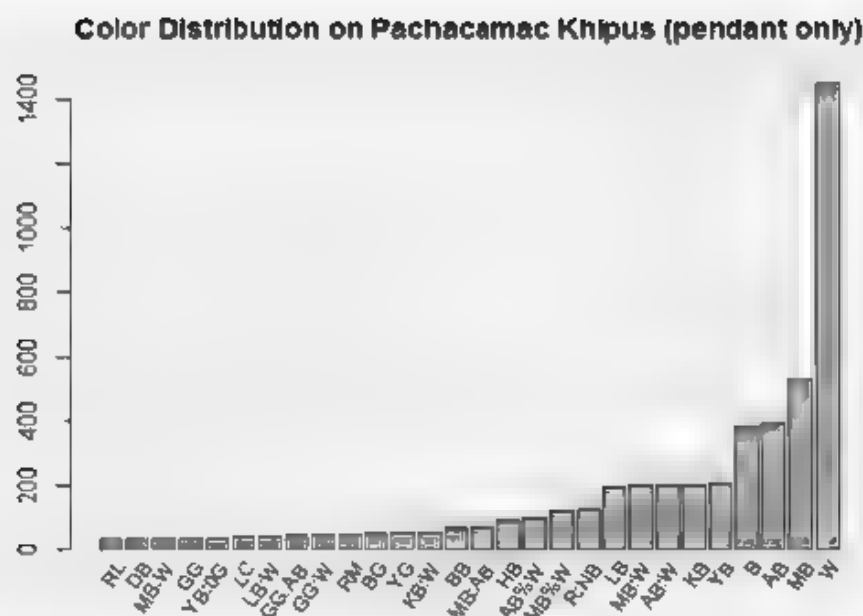


Chart 6.3. Distribution of pendant cord colors on Pachacamac khipus

is 15,610. This gives us a rough sense of the prevailing numerical magnitude of units of objects that were being deposited, and accounted for, by the khipu-keepers at Pachacamac

Cord color is another area of variation in *khípus*. Chart 6.3 shows, along the vertical axis, the relative totals of the colors of pendant cords in the Pachacamac archive. The horizontal axis displays the notations for the colors. The predominant colors are white (W), medium brown (MB), light brown (AB), and moderate yellowish brown (B) (see the chart of colors in plate 14). More infrequent are the five shades of brown or browns mixed with whites. Brighter, more colorful hues occur infrequently in the Pachacamac *khípus*.

Khipu archives from specific sites show considerable regularity in the use of color (rather than spacing) as a basis for forming cord clusters. The two most prevalent patterns seen in khipus across the total corpus of 923 khipus in the KDB inventory are *color banding* (i.e., a set of cords of one color, followed by a set of a different color, followed by a set of a third color, etc., see fig. 6.12 as well as the discussion of color banding in the Santa valley in chapter 12), and *color seriation* (i.e., the repetition of a series of different colors across a set of cords: white, light brown, dark brown, mottled brown & white // white, light brown, dark brown, mottled brown & white // repeat . . . ; see fig. 6.13 and the discussion of color seriation in the Puruchuco khipus, in chapter 5)

As for color coding as a technique for formatting cord grouping in the

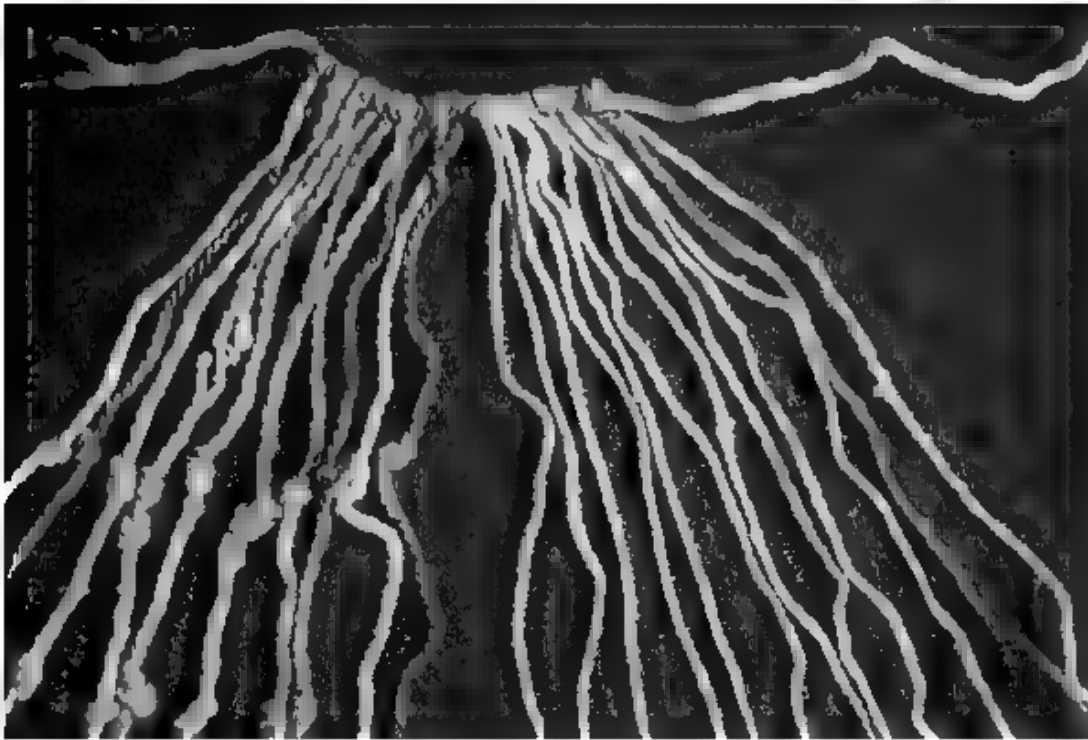


Figure 6.12 Khipu RN43393, illustrating color banding (courtesy of Denise Pozzi Escot, director, Pachacamac site museum)



Figure 6.13 Khipu RN81938, illustrating color seriation (courtesy of Denise Pozzi Escot, director, Pachacamac site museum; photograph by Rommel Angeles)

Table 6.1. Matching *kipus* from Pachacamac

<i>Khipu</i>	<i>Numerical Value</i>	<i>Color</i>	<i>Number of cords and other structures</i>
LR1131	10,449	W	146 cords, every cord has one subsidiary
LR1095	9,694	B	146 cords, about one-quarter carry subsidiaries
LR1144	8,148	LB.W	62 cords, no subs.
LR218	8,282	AB	62 cords, no subs.
UR1151	228	KB.W	23 cords, about two-thirds carry subs.
AS189	290	W	23 cords, about two-thirds carry subs.
LR1096	437		77 cords, every seventh cord is a top cord
LR196	410	KB.W-KB	78 cords, all but a dozen or so have one or more subs
HP018	434		28 cords, cords #3 to #9 carry one sub. each.
LR243	439	W	28 cords, only cord #1 has sub.
LR226	12,019	AB	36 cords, from #16 to #36 about three-quarters have subs.
LR230	830	MB	36 cords, from #16 to #29 about three-quarters have subs.

Pachacamac corpus, forty-five samples are color banded, twenty five are color seriated, sixteen display mixed color banding and color seriation, and the remainder have no color formatting for forming cord clusters. Again, these patterns represent a high level of intra-archive variability as compared to other sites and proveniences within Inka territory

The message we can take from these discussions of *kipu* construction, numbers, and colors is that the Pachacamac corpus is quite varied in all of these modes—generally much more so than is true of other local collections. I return to this issue in the conclusions.

Accounting and Controls, or Checks-and-Balances Accounting at Pachacamac?

The kinds of controls that may have existed in the Pachacamac accounting system are suggested by the apparent presence of “matching” or “closely matching” *kipus* (see chapters 4, 5, 8, and 9)²⁰ These are pairs of samples that have the same, or close, numbers of cords, the same, or close, color patterning, and the same, or close, numerical values knotted into series of cords. I argue in chapter 9²¹ that both “matching” and “closely matching” *kipus* may have constituted examples of checks-and-balances accounts—perhaps something approaching double-entry accounting in Inka cord keeping. There are six “closely matched” pairs at Pachacamac (table 6.1).

What could explain such pairings of *kipus*? They might be an indication that the Pachacamac *kipukamayuqs* tried to exercise some degree of control over what was claimed to have come into the site, as offerings, as compared to what was counted as having actually arrived, or what had been stored versus what had been removed from storage, for offering to the oracle and/or to temple officials. Paired, closely matching *kipus* provided an instrument for checks-and-balances accounting. One of such a pair of closely matching *kipus* could have been kept by those who brought goods into the site and claimed they had been “delivered” (e.g., at the Plaza of Pilgrims), while the other could have recorded what the Pachacamac *kipukamayuqs* counted as they assured themselves that what was said to have been donated had been received (see chapter 9 for similar accounting practices at the Inkawasi storage facility)

Interpretation and Implications of the Diversity of the Pachacamac Khipu Corpus

The Pachacamac *khipu* corpus differs in one important respect from other *khipu* archives found along the coast of Peru. In most cases, when numerous samples are found at a given site (such as at Puruchuco; chapter 5), they generally exhibit a number of shared structural characteristics and other physical features (e.g., color patterning, mode of construction, knot directional patterns, etc.)²² The Pachacamac *khipu* corpus, however, displays a remarkable range of variation in size, structural features, color patterning, and other characteristics. Why do the Pachacamac *kipus* display such variety and why are they so strikingly different from other archival collections?

Much of the diversity of the Pachacamac corpus may reflect the far flung origins of the *kipus* brought to this great oracle center by pilgrims from across the Inka Empire. Some of the *kipus* may have been made and used at Pachacamac, perhaps by local *kipukamayuqs* in the service of the great oracle. Nonetheless, the Pachacamac corpus does not seem to have been produced according to a single, local stylistic standard, or paradigm; rather, it reflects different traditions of cord making from around the empire. It seems highly likely that this diversity signaled Pachacamac’s status as a pilgrimage center—a place to which people traveled from far away, bearing a great variety of gifts and offerings to the oracle, and leaving behind their own *khipu* records. Keeping accurate accounts of the great influx of precious objects deposited at

the oracle was important both to the pilgrims and to the record keepers, who were probably overseen by the priests attending the oracle

Pachacamac may in fact have been a place of exceptional importance in the history of the development and evolution of cord keeping in Tawantinsuyu. In few other places, save for the various administrative centers spread along the royal road and the capital of Tawantinsuyu itself, Cuzco, would there have been opportunities for encounters and communication among cord keepers from around the empire. Such settings may have been extremely important in serving as sites for vital coordinating activities, such as establishing and adjusting structures and values between different traditions of cord keeping and comparing different techniques of recording among *kipukamayus* from around the empire.

Finally, I would add that there is a danger in going too far in pointing out the differences between the Pachacamac corpus and collections found in other river valleys along the Peruvian coast. While the variations pointed out above are real, nonetheless a *kipu* is still a *kipu*, with each having essentially all the basic features we have seen in other archives and collections, one does not doubt in the end that within the observed diversity and variation of features (e.g., the number of cords in color-coded cord groupings), there is still considerable overall uniformity wherever a given collection was produced. This broad uniformity renders even an unusual collection such as that at Pachacamac a part of the larger class comprising all “Inka *kipus*.” This is important to bear in mind, for I have long argued²³ that there was a high degree of standardization and conventionalization of construction features and sign values in the entire *kipu* corpus across Tawantinsuyu. I think of the relationship of uniformity and diversity in *kipu* construction as being of an order comparable to a single language being spoken with different accents, or even dialects. For instance, the local and regional differences in spoken English within the United States do not deny the intelligibility or the intercommunicability that exists among English-speakers across the United States. This is how I suggest we should think of the status of the variations in the Pachacamac corpus vis-à-vis cord keeping across the empire—this particular corpus was different, but it was still decidedly a part of the larger tradition and, therefore, legible well beyond the confines of the kingdom of Yschma.

Appendix. Pachacamac Khipus

See plate 14 for an explanation of colors and the abbreviations used.

<i>ID</i>	<i>Value</i>	<i>Colors</i>	<i>Length</i>	<i>Museum</i>
LR1097	131	B	206.5	Ethnologisches Museum, Berlin
LR1099	15,505	W	96	Ethnologisches Museum, Berlin
AS101 - Part 1	2,100	W	46.5	Ethnologisches Museum, Berlin
AS101 - Part 2	1,340	W	26.5	Ethnologisches Museum, Berlin
LR1102	665	B-BB	44.5	Ethnologisches Museum, Berlin
LR1104	205,515	LB-W	55.5	Ethnologisches Museum, Berlin
AS110	424	W	36	Ethnologisches Museum, Berlin
AS111	1,085	GG-W W	53	Ethnologisches Museum, Berlin
AS112	10		[bar]	Ethnologisches Museum, Berlin
LR1118	56,189	DO-W	71	Ethnologisches Museum, Berlin
LR1119	105,947	DB-B-W	50.5	Ethnologisches Museum, Berlin
LR1121	122	W	161	Ethnologisches Museum, Berlin
AS125	48,362	W	62	Ethnologisches Museum, Berlin
LR1131	10,449	W	200.5	Ethnologisches Museum, Berlin
AS134	239	LB	72	Ethnologisches Museum, Berlin
AS139	4,027	MB-CB-W W	46.5	Ethnologisches Museum, Berlin
LR1144	8,148	LB-W	52.5	Ethnologisches Museum, Berlin
LR1145	19,088	B	143	Ethnologisches Museum, Berlin
LR1151	228	KB-W	92	Ethnologisches Museum, Berlin
AS156	3,846	B	80.5	Ethnologisches Museum, Berlin
AS158	149	LB	23.5	Ethnologisches Museum, Berlin
LR1163	274	B	25	Ethnologisches Museum, Berlin
LR1165	473	W	60	Ethnologisches Museum, Berlin
LR1167	1,275	B-W	62	Ethnologisches Museum, Berlin
AS170	35,108	B	63	Ethnologisches Museum, Berlin
AS172	74,376	W	54.5	Ethnologisches Museum, Berlin
LR1175	11,979	B-W	210	Ethnologisches Museum, Berlin
AS187	302		91.5	Ethnologisches Museum, Berlin
AS188	593	DB-W	55	Ethnologisches Museum, Berlin
AS189	290	W	48.5	Ethnologisches Museum, Berlin
LR115	190	MB-MB-AB	34.5	Museum of World Culture, Goteborg
LR1095	9,694	B	89	Staatliches Museum für Volkerkunde, Munich
LR1096	437		66	Staatliches Museum für Volkerkunde, Munich
LR123	1,164	MB	28	Museum of World Culture, Goteborg
LR124	754	AB-W	17	Museum of World Culture, Goteborg
LR126	190	MB-MB-W	35.5	Museum of World Culture, Goteborg
LR1034	2,570	W	243.5	National Museum of Natural History, Smithsonian, Washington, DC
AS075	573	MB-YB	162.5	Musée de l'Homme, Paris
HP001	28,040		52	Museo de Sitio de Pachacamac
HP002	29,080		67	Museo de Sitio de Pachacamac
HP003	5,023		30	Museo de Sitio de Pachacamac

<i>ID</i>	<i>Value</i>	<i>Colors</i>	<i>Length</i>	<i>Museum</i>
HP004	1,344		54.5	Museo de Sitio de Pachacamac
HP005	1,177		37	Museo de Sitio de Pachacamac
HP006	1,941		12.2	Museo de Sitio de Pachacamac
HP007	6,718		10.3	Museo de Sitio de Pachacamac
HP008	2,690		8.8	Museo de Sitio de Pachacamac
HP009	497		45.5	Museo de Sitio de Pachacamac
HP010	63,409		43	Museo de Sitio de Pachacamac
HP011	14,856		32	Museo de Sitio de Pachacamac
HP012	3,496		15.8	Museo de Sitio de Pachacamac
HP013	414		5	Museo de Sitio de Pachacamac
HP014	1,107		56	Museo de Sitio de Pachacamac
HP017	4,386		42	Museo de Sitio de Pachacamac
HP018	434		15	Museo de Sitio de Pachacamac
HP019	31		27.8	Museo de Sitio de Pachacamac
HP020	91		71	Museo de Sitio de Pachacamac
HP021	3,501		41	Museo de Sitio de Pachacamac
HP022	314		33	Museo de Sitio de Pachacamac
HP023	1,271		57.5	Museo de Sitio de Pachacamac
HP024	1,277		31	Museo de Sitio de Pachacamac
HP025	0		46	Museo de Sitio de Pachacamac
HP026	0		33.2	Museo de Sitio de Pachacamac
HP027	198,386		17.8	Museo de Sitio de Pachacamac
HP028	0		50	Museo de Sitio de Pachacamac
HP029	16,404		28	Museo de Sitio de Pachacamac
HP030	52,916		42.4	Museo de Sitio de Pachacamac
HP031	76		71	Museo de Sitio de Pachacamac
HP032	149		15.2	Museo de Sitio de Pachacamac
LR196	410	KB-W KB	85	Ethnologisches Museum, Berlin
LR197	23,594	AB	280.5	Ethnologisches Museum, Berlin
LR199	1,627	KB:AB:GG	78	Ethnologisches Museum, Berlin
LR200	43,860	MB-W	77.5	Ethnologisches Museum, Berlin
LR201	73,402	MB-W	62.4	Ethnologisches Museum, Berlin
LR202	4,679	W-MB	26	Ethnologisches Museum, Berlin
LR208	7,138	W	240	Ethnologisches Museum, Berlin
LR212	6,533	AB	172	Ethnologisches Museum, Berlin
LR213	9,267	W-AB-W	51.5	Ethnologisches Museum, Berlin
LR214	73	AB	61.5	Ethnologisches Museum, Berlin
LR216	1,931	FR	68	Ethnologisches Museum, Berlin
LR218	8,282	AB	28	Ethnologisches Museum, Berlin
LR226	12,019	AB	137	Ethnologisches Museum, Berlin
LR230	830	MB	47	Ethnologisches Museum, Berlin
LR243	439	W	68.5	Ethnologisches Museum, Berlin
LR245	34	MB-W	27	Ethnologisches Museum, Berlin
LR244	401	KB-AB-W	?	Ethnologisches Museum, Berlin
LR246	2,281	MB-AB-W	57	Ethnologisches Museum, Berlin
LR247	76,343	W	59.5	Ethnologisches Museum, Berlin
LR248	42,824	KB-W	39	Ethnologisches Museum, Berlin
LR249	47,809	KB-AB	46	Ethnologisches Museum, Berlin
		KB-BG AB		
LR253	865	KB-MB-AB	29.5	Ethnologisches Museum, Berlin
LR254	625	KB-W-W	37	Ethnologisches Museum, Berlin

The Iconography of Inebriation

ENGRAVED AND SCULPTED KH PU BARS

The recording of information on *kipus* was, generally speaking, non-iconic in nature. It is believed that information was recorded always and only by variations in cord structure, color, and the tying of knots on cords, but never in the form of conventionalized or stylized images, or icons. Like many (if not most) truisms, however, there are exceptions. This chapter will describe decorative elements attached to or integral to a half-dozen *kipus*, in most instances these are carved figures on wooden bars to which the *kipus* are attached. The imagery on the majority of these decorated wooden bars conveys—or perhaps more appropriately, celebrates—the production and consumption of *chicha*, the Andean fermented beer made from maize.

Decorated *kipus* first came to my attention in the 1990s when I was studying the large *kipu* collection in the Ethnologisches Museum in Berlin.¹ I will begin with a description of these *kipus* and then discuss two specimens found in museums elsewhere. Aside from describing these *kipus*, my objective is to explore what representational imagery is found on *kipus* and why it might have been placed on these objects, which are, otherwise, relentlessly non-iconic.

Kipus on Drilled Wooden Bars with Representational Elements

In addition to the “free” primary cords that characterize the majority of *kipus*, there are a number of instances (my estimate is around twelve to fifteen *kipus*) whose primary cord passes through holes drilled into a wooden bar. An example of such a drilled wooden bar, shown in figure 7.1 (which lacks its primary cord), is found in the Pachacamac site museum.

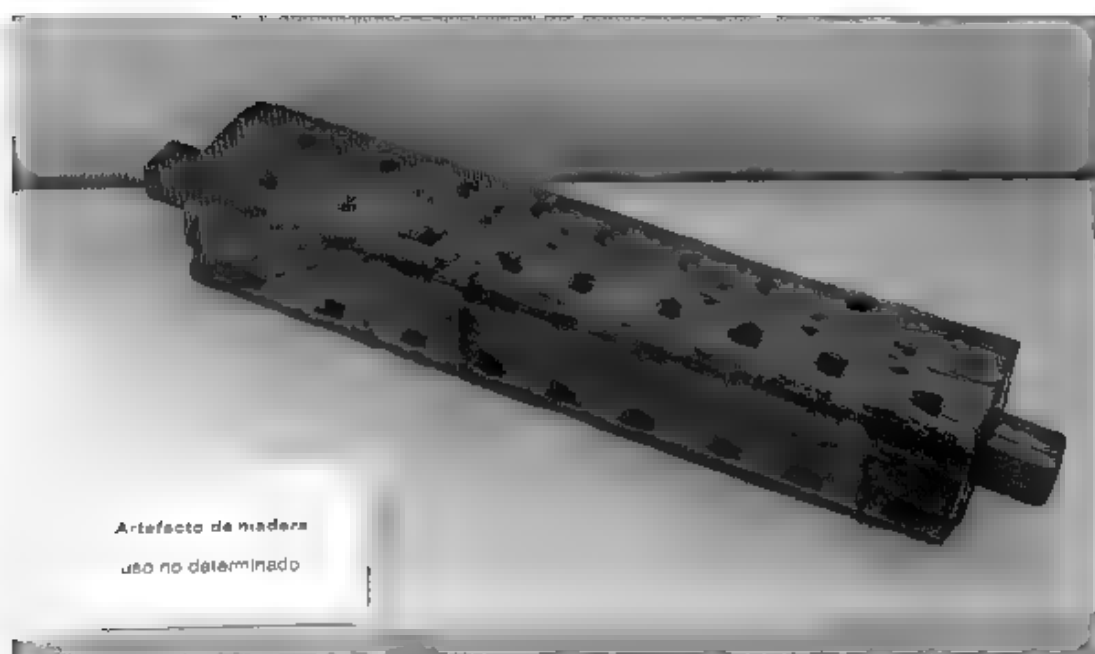


Figure 7.1. Dried wooden bar for holding khipu primary cord (courtesy of Denise Pozzi-Escot, director, Pachacamac site museum; photograph by Rommel Angeles)

A khipu attached by its primary cord to a drilled wooden bar is shown in figure 7.2. This item is in the Ethnologisches Museum (VA 24370a and b).² Not every wooden bar accompanying a khipu is adorned by carved figures but we will consider here only those with such images. The wooden khipu bar in figure 7.2 has an image carved into the center of one of its sides (see fig. 7.3). The figure, carved within a square frame, is a bird, which appears to be diving, as the tip of its beak is just touching an uneven, wavy, undulating surface at the bottom of the square frame; I interpret this wavy element as intended to represent the surface of the ocean.³ The bird's wings are arched and pointed at the ends, and the tail feathers are divided into four sections. The eye of the bird is set into the center of its head, and the beak is open suggesting that it is shown in profile. While khipu VA 24370a and b is without provenience (as is true of most of the other examples discussed herein),⁴ I suspect that this khipu came from the coast and that the bird carved into the wooden bar represents an ocean bird. It is possible that the image depicts a booby (genus *Sula*), a marine bird common off the coast of Peru that dives from great heights into the sea and pursues its prey underwater.⁵

The next three objects, all from the Ethnologisches Museum, display figures either carved integrally with the wooden bar or (apparently) carved separately and cemented atop the bar, probably with some form of resin. The first of the three (VA 24371)⁶ shows a pair of what appear to



Figure 7.2. Khipu VA 24370a and b, attached to wooden bar (author photo, courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)



Figure 7.3. “Diving bird” carved on side pane of khipu VA 24370a and b (author photo, courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)

be monkeys with downward curving tails, poised on opposite sides of the bar (fig. 7.4). The figures stare at each other across the khipu cords, which emerge between them from the drilled holes on two sides of the wooden bar. The figures are carved integrally with the bar (fig. 7.5).

Figure 7.6 gives an enlarged view of one of the two animals carved on this khipu, I believe they most likely represent monkeys. New World monkeys, such as the spider monkey and the howler monkey (see fig. 7.7), are the only monkeys with prehensile, under-curling tails similar to those carved on the sides of the bar on khipu VA 24371. The flat face and slightly protruding snout of the howler monkey also appear to be clearly evident in figure 7.6.

Why are two monkeys perched on a khipu bar? I suggest that the figures are an allusion to the drunken, monkey-like behavior induced by the excessive consumption of alcohol, such as maize beer (*chicha*). In the highland village of Pacariqtambo, where I carried out fieldwork in the 1980s, people used small vessels for drinking powerful grain alcohol, called *trago*; these particular drinking vessels were called *kusilluq* (Quechua for “monkey”).⁷ If the figures on khipu VA 24371 do indeed represent monkeys, then I think it is likely that the khipu cords attached to the bar accounted for *chicha* consumed at festivals. The monkeys on the khipu bar celebrated the state of inebriation brought on by the (usually)



Figure 7.4. Khipu VA 24371 with two monkeys on wooden bar (author photo; courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)



Figure 7.5. *Detail: the two monkeys on khipu VA 24371 (author photo; courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)*



Figure 7.6. *Detail: monkey on khipu VA 24371 (author photo, courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)*



Figure 7.7. Howler monkey, with prehensile tail and flat face (<http://a-z-animals.com/animals/howler-monkey/>, open source)

massive consumption of chicha that went on during Inka state festivals.⁸ I return to this point below.

The next khipu combines birds and drinking. The khipu shown in figure 7.8 (VA 16636),⁹ again from the Berlin Ethnologisches Museum, is attached to a wooden bar on one end of which is carved a bird with its large, pelican- or parrot-like beak attached to the bar, on the other end sits a man wearing a pill box hat and holding a kero, a cup designed specifically for drinking chicha.¹⁰ This example is originally from Nazca, on the southern coast of Peru. A close-up of the man with the kero, who has been attached to the khipu bar, is shown in figure 7.9. I suggest that this sample also signals that the khipu record attached to the wooden bar is related to chicha production, probably for the state-sponsorship of festivals.¹¹ The significance of the bird perched at the opposite end of the bar eludes me.

The final khipu device from the Ethnologisches Museum collection VA 16635¹²—is a wooden bar through which the khipu primary cord passes and on top of which sit three men. Like the previous instance, this one is also from Nazca. Each of the three men on the bar is attached to one of three cords from which the khipu can be suspended (fig. 7.10).



Figure 7.8. Khipu VA 16636 with man and bird on wooden bar (author photo; courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)



Figure 7.9. *Detail: man holding kero on kn pu VA 16636 (author photo; courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)*

The three men are shown in close-up in figure 7.11. They wear identical hats, which consist of elliptical-shaped folds of material on top of their heads and a band going around the upper part of their foreheads to which is attached a chin strap. The hats have tassels hanging down to one side of the head: the tassel on the central figure hangs to the left side of his head, while those on the two end figures hang down on the right side of their heads. Headgear was said to be indicative of ethnic identity in the Inka empire;¹³ however, the ethnic origin of these three men is not apparent to me.

The middle figure, clasping his two hands in front of his chest, holds a suspension cord. Both of the figures at the ends of the bar hold a kero—square in cross section—on their right knee and hold their left arm across the chest. The suspension cords on the ends of the bar protrude from the keros (see fig. 7.12). I suppose that this khipu may have also been related to the production of chicha, and the celebration of its consumption.

The theme of drinking and drunkenness is also portrayed on the figured wooden bars associated with two other khipus, one in the Krannert Art Museum, University of Illinois at Urbana-Champaign, and the



Figure 7.10. Kh pu VA 16635 with three men on wooden bar (author photo, courtesy of Ethno.logisches Museum, Staatliche Museen zu Berlin, Preuss'scher Kulturbesitz)

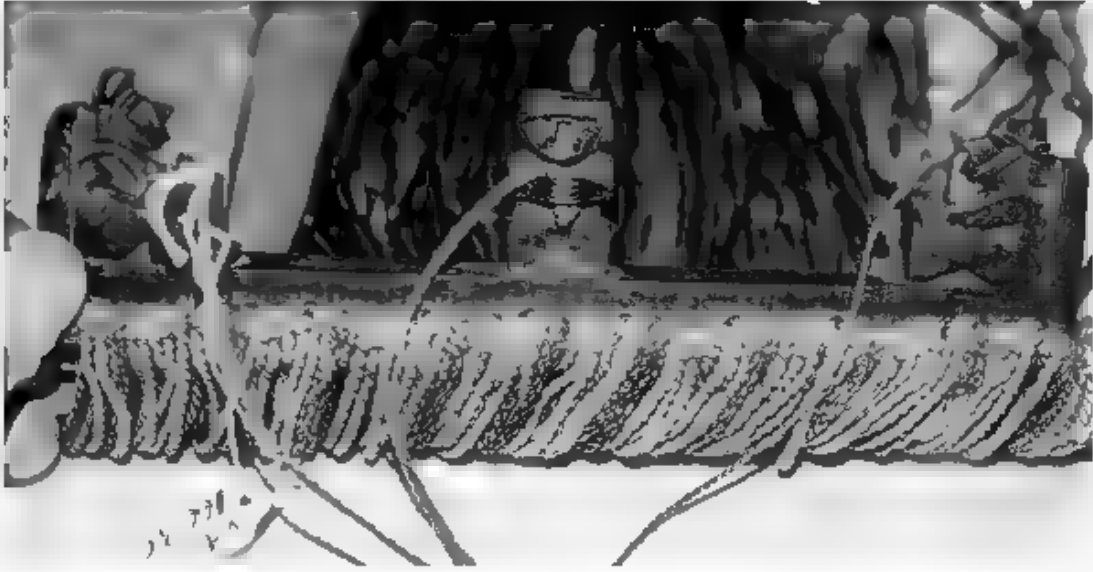


Figure 7.11. *Detail* the three men on khipu VA 16635 (author photo; courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)

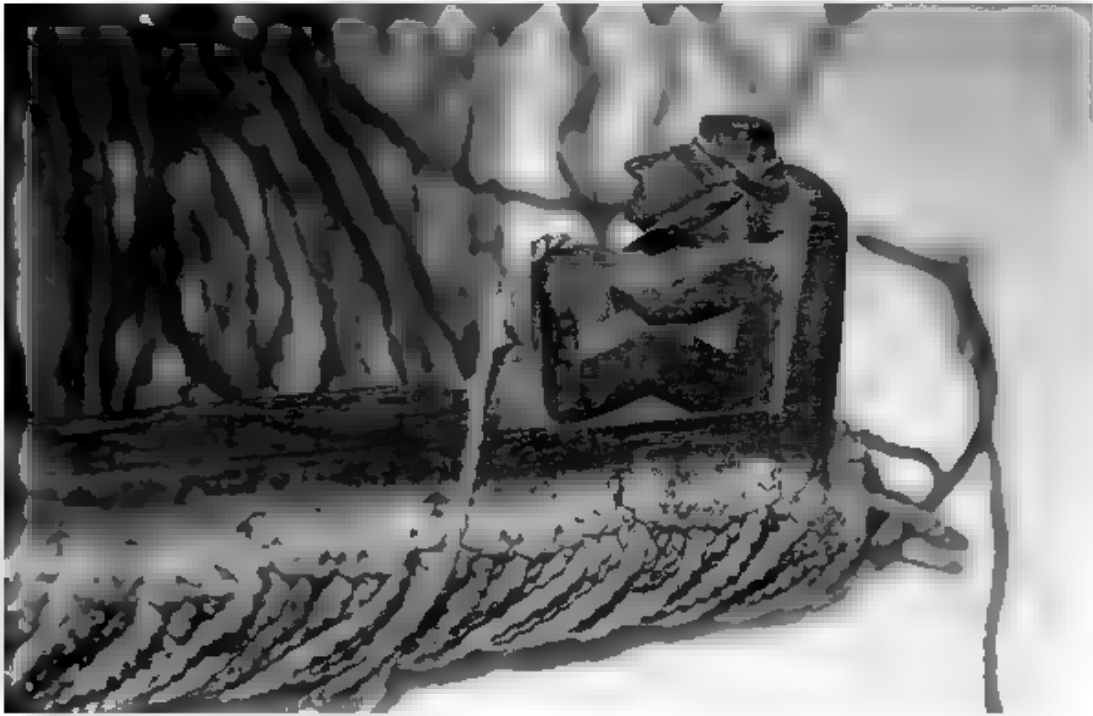


Figure 7.12. *Detail:* one of the end figures on bar of khipu VA 16635 (author photo, courtesy of Ethnologisches Museum, Staatliche Museen zu Berlin, Preussischer Kulturbesitz)



Figure 7.13. Khipu on wooden bar, 1470–1532, wood, cotton, alpaca (Krannert Art Museum, the Fred Olsen Collection, 1967-29-340; courtesy of the Board of Trustees of the University of Illinois on behalf of its Krannert Art Museum)

other in the Princeton University Museum. The Krannert Art Museum sample (fig. 7.13) consists of a khipu attached to a wooden bar, on the top of which sit, at either end, two men, in a manner similar to the men sitting on the ends of the khipu bar shown in figure 7.11. One of these two individuals (fig. 7.14) is seated with his legs apart, his left hand on his left knee and his right hand clutching a kero; his lips are pursed, as though he is whistling. The two men wear hats similar to those worn by the three men in figure 7.10.

The example from the Princeton University Museum is a khipu on a wooden bar. In this case, however, the bar has been carved into the shape of a bench, with a back and two ends. Between the ends of the bench sit three men, with one on each end and both looking at the cen-



Figure 7.14. *Detail: figure of man on Krannert Art Museum 1967-29-340 (fig. 7.13)*



Figure 7.15. Khipu with three men on wooden bar/bench, wood and knotted string, bar: h. 3.9 cm, w. 14.6 cm, d. 2.1 cm; museum purchase, gift of Alan Marquand, class of 1874, and Mrs. Marquand, by exchange, 1990-73 (courtesy, Princeton University Art Museum)

tral figure, who sits off center, to the viewer's left (fig. 7.15). All three men hold a kero in one hand and an ear of corn in the other. The two men on the ends hold their keros in their right hand (and on the right knee) and the ear of corn in the extended left hand. The central figure holds the kero in his left hand and an ear of corn in the right. All figures wear mantles over their shoulders, and their hats are almost exactly like those worn by the three men in figure 7.10. A close up of the central figure (fig. 7.16) shows a well-sculpted face, with a long nose, a thin, slightly open mouth, and almond-shaped eyes.

The Princeton example makes the connection between khipus on carved wooden bars and the drinking of maize beer abundantly clear. In



Figure 7.16. *Detail: centra figure on Princeton University Museum y1990-73 (fig 7.15)*

this case, the link is quite direct, as all three figures hold an ear of corn in one hand and a kero in the other

Conclusions

This chapter has focused on *kipus* that are mounted on wooden bars (or, in the Princeton case, a bench) decorated with carved imagery or sculpted figures. With the exception of the bars with the diving bird and the monkeys, all the other examples display at least one figure holding a kero or an ear of corn, both related to *chicha*. Although *kipus* associated with decorative imagery are quite rare, the few examples that have survived can be unequivocally linked to the production and consumption of *chicha*, the drink of choice in Inka state festivals.

I presume that the accounting registered on several of these *kipus* pertains to the production of *chicha* at state facilities, such as at *aqllawasis*—houses of young women in service to the state, where corn beer was produced for state-sponsored festivals. That said, I have studied the numerical values knotted into these samples carefully, and nothing there shouts out to me: “*chicha*!” Perhaps as our understanding of Inka accounting and recording practices becomes more informed, we will be able to identify numerical values and patterns related to *chicha* production and distribution.

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What Did the *Ceque* *Khampus* Look Like?

The city of Cuzco lay at the heart of the Inka Empire, high in the Andes of what is today southeastern Peru. It served as the administrative center of the empire, the place to which and from which all matters vital to the life and well-being of the Inka ruler were directed (fig. 8.1).¹ Unfortunately for *kipu* studies—and although all recording and accounting activities undertaken by the *kipukamayus* ultimately were overseen by officials in, or dispatched from, Cuzco—for a variety of reasons (e.g., because they were hidden, lost, or destroyed), we do not have a single *kipu* that can be said to have come from the capital.² Nonetheless, I believe we can say something about the nature and importance of cord keeping in Cuzco on the basis of close study both of samples from other parts of the empire and of those that lack provenience. We will look at a couple of these samples following a discussion of how, I suggest, they are relevant for consideration of the organization of the city of Cuzco.

In this chapter I describe Cuzco's *ceque* system, which provided the framework for the social and political organization as well as the ritual practices within the city.³ The forty-one *ceques* (alignments), centered on the city's sun temple, were mappings of sacred places—called “*wakas*”—located in and immediately around the city (fig. 8.2). It is important to note that the *ceque* system was not unique to Cuzco. Spanish chronicles indicate that there were at least one hundred other towns throughout Tawantinsuyu that were delineated by *ceque* systems.⁴ As for Cuzco's influence over such systems, the magistrate Polo noted that Cuzco instructed agents in newly conquered territories on how to organize such systems, a process which, I imagine, would probably have been carried out by *kipukamayus* sent out from the capital. As stated by Polo:



114 Hypothetical bird's-eye view of Inca Cuzco, showing the city blocks and the basic *kancha* plan (see II.124) of the houses within them. The dead plazas of the Acropolis and the Casapichu are in the center, and Sacsayhuamán lies on the road above the center. Arrows show the main roads connecting Cuzco to the four quarters of the Inca realm.

Figure 8.1. Imagined bird's-eye view of Cuzco at the time of the Inca Empire (drawing courtesy of Vincent Lee; used by permission)

Thus in this way does the Inca teach them this division of places in all that was conquered, charging them greatly with the benefit which they would receive in notifying everyone in this land of what they had and could make use of for their needs which today they do by the same system and have persons designated who understand this, and thus it is necessary in all the villages to have them make a map, and, seeing the map of Cuzco, they will do it.⁵

ized standard, lending coherence to the system as a whole, much as a subway map shows routes in straight lines even though the actual rail tracks twist and turn. Crooked ceque lines guided the on-the-ground activities connected with waka worship as people walked from one place to the next across the rugged terrain within the valley of Cuzco

Cuzco and its ceque system were divided into moieties (Hanan/upper Cuzco and Hurin/lower Cuzco), each of which was further subdivided into two parts, forming the four suyus ("parts," or quarters) of Tawantinsuyu (Chinchaysuyu and Antisuyu in Hanan Cuzco and Collasuyu and Cuntisuyu in Hurin Cuzco). Three of the suyus contained a total of nine ceques, each being composed of three ceques (see below); the fourth quarter, Cuntisuyu, had fourteen ceques. Within the quarters, the ceques were ranked hierarchically and were generally designated by the triadic category labels (from highest to lowest) *collana*, *payan*, and *cayao*. The order of these three categories, as they were repeated around the center of the system—i.e., the Coricancha (the Temple of the Sun)—varied between the moieties: in upper/Hanan Cuzco the hierarchy ran clockwise, while in lower/Hurin Cuzco, the ceque hierarchy proceeded counterclockwise (see fig. 8.3).¹⁰

A Pair of Ceque System-like Khipus

We have colonial testimony that the ceque system was recorded on a khipu,¹¹ and without wishing to claim that I have identified anything so spectacular as a "ceque khipu," I do believe that the cord structure and color patterning of a pair of khipus at Lima's Banco Central de la Reserva Museum could easily have accommodated the semasiographic labeling of the ceque system's sectional and hierarchical features, especially those of dualism, triadism, and the reversal of direction of categories among the ceque lines. Based on what we have seen in previous chapters (e.g., the pair of years in the Laguna de los Cóndores khipus; the matching pairs of khipus in Puruchuco and Pachacamac), it will come as no surprise that our focus will be on a pair of khipus that may have registered a ceque-like system.

The two khipus in question are part of a group of five khipus tied together into a "linked set" (see plate 6), and they are labeled UR53B and UR53C (fig. 8.4). Aside from color patterning, I did not find that the other three samples in the set represent the same kind of organization as the two khipus in question.

Table 8.1 juxtaposes the tabular data from khipus UR53C and UR53B.

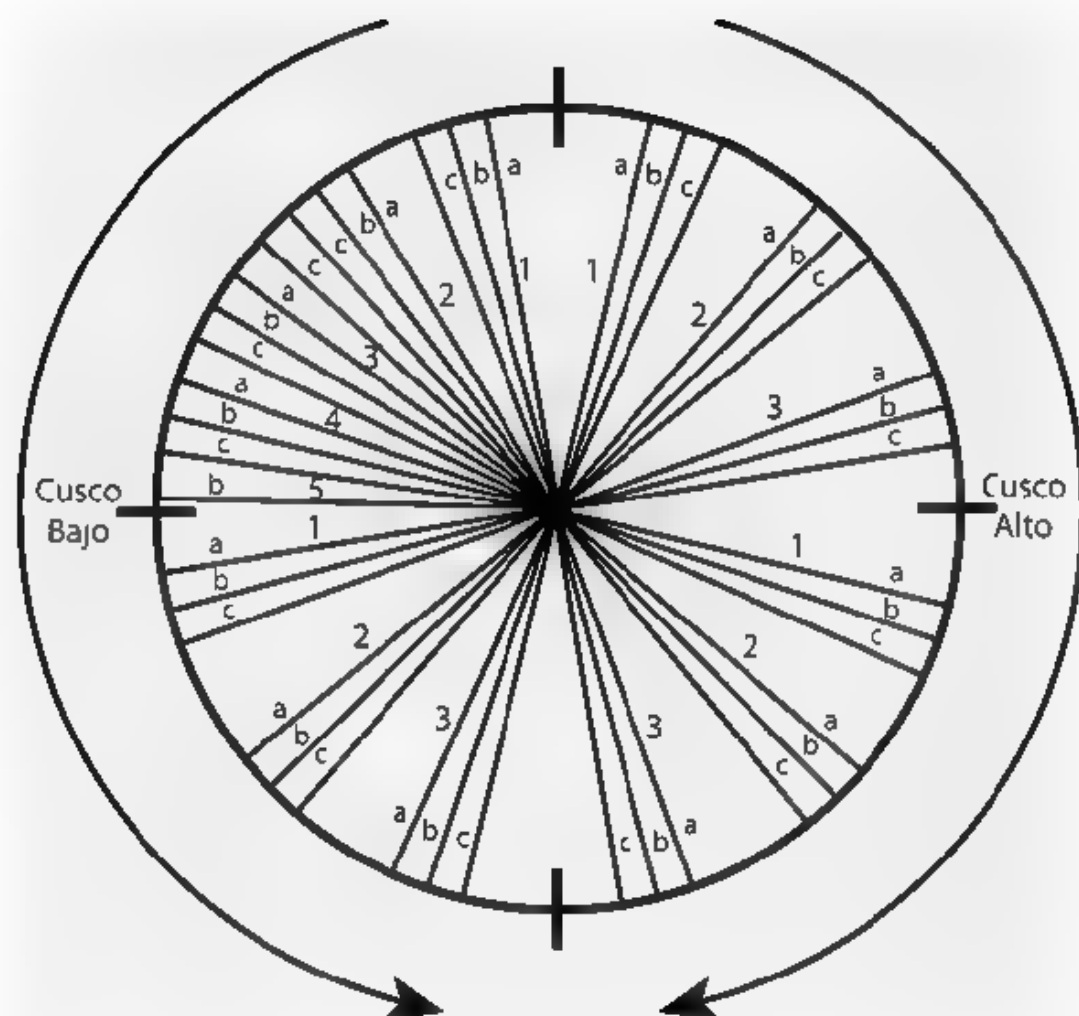


Figure 8.3. Direct onality of hierarch ca. order in the mo et es of the ceque system (draw ng by Carrie J. Brezine, used by permission)

All the khipus in this linked set share a particular organization of cord colors; that is, al. five khipus display the repeating three cord color pattern white (W) / reddish orange (RL) / light brown (AB). In khipu UR53C, the W/RL/AB color sequence is repeated across three-cord sets of pendant cords (each pendant cord has been given an independent cord number, shown in the first column of table 8.1) As for khipu UR53B, however, the W/RL/AB sequence appears on sets consisting of two pendant cords, the second of which carries a subsidiary cord, producing the sequence: cord #1, cord #2, subsidiary cord #2s1 Thus, the similarity between these two samples in terms of the repeating three-color sequence belies a fundamental difference between them in terms of the number and arrangement of cords bearing those colors: pendant/pendant/pendant as opposed to pendant/pendant/subsidiary I believe that these two khipus exhibit a three-term arrangement of categories

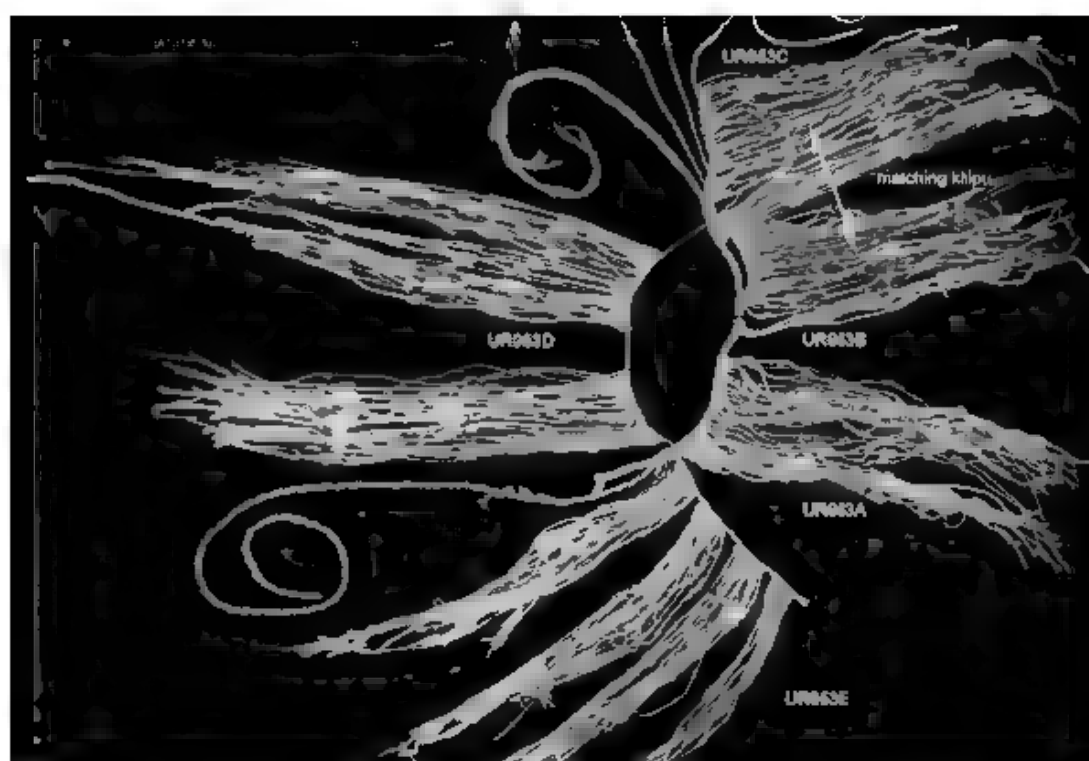


Figure 8.4. The separate khipus of the linked set, showing matching khipus JR53B and JR53C (author photo; courtesy of Banco Central de la Reserva del Perú, Lima)

that mimics the collana/payan/cayao (high/middle/low) organization of hierarchical ranking of the ceque system of Cuzco.

Next, as shown in table 8.1, from pendant cord #11 of khipu UR53C and pendant cord #1 of khipu 53B, the numerical values registered on respective cords in matching positions are identical, or (generally) quite close in value. This feature allowed me to describe this pair of khipus as “closely matching” in an earlier publication.¹² However, if these khipus were indeed intended to register the same (or similar) data, they must have done so in a way that classified the information somewhat differently. As we saw, the two khipus show differences in the three color cord pattern and its distribution among cords versus cords and subsidiaries. Despite this difference, however, and since these two khipus appear to register quite similar numerical values and display identical color patterning, was the pair conceived of as identical accounts, or copies? As we will see below, another feature suggests that they are almost exact opposites—we might say complementary opposites. This, in effect, is precisely how the relationship between the Hanan and Hurin moieties of Cuzco is often characterized.

The second column in each data set from khipus UR53C and UR53B shows a notation for how the pendant cords are attached to the main cord of the respective khipu. The two forms of attachment¹³ are re-

Table 8.1. Attachments, colors, and values on matching khipus UR53B and JR53C

<i>Khipu UR53C/1000267</i>				<i>Khipu UR53B</i>			
<i>Cord Number</i>	<i>Attachment</i>	<i>Color</i>	<i>Value</i>	<i>Cord Number</i>	<i>Attachment</i>	<i>Color</i>	<i>Value</i>
1	V	AB	2	1	R	W	53
2	V	W	41	2	R	RL	13
3	V	RB	10	2s1	U	AB	3
4	V	AB	6	3	R	W	53
5	V	W	73	4	R	RL	15
6	V	RB	4	4s1	U	AB	5
7	V	AB	5	5	R	W	63
8	V	W	53	6	R	RL	16
9	V	RL	14	6s1	U	AB	16
10	V	AB	2	7	R	W	63
11	V	W	53	8	R	RL	17
12	V	RL	13	8s1	U	AB	19
13	V	AB	3	9	R	W	74
14	V	W	53	10	R	RL	16
15	V	RB	15	10s1	U	AB	8
16	V	AB	5	11	R	W	33
17	V	W	63	12	R	RL	13
18	V	RB	16	12s1	U	AB	5
19	V	AB	16	13	R	W	53
20	V	W	63	14	R	RL	12
21	V	RL	17	14s1	U	AB	16
22	V	AB	17	15	R	W	58
23	V	W	74	16	R	RL	16
24	V	RL	16	16s1	U	AB	16
25	V	AB	8	17	R	W	52
26	V	W	53	18	R	RL	11
27	V	RB	13	18s1	U	AB	14
28	V	AB	5	19	R	W	32
29	V	W	53	20	R	RL	10
30	V	RL	12	20s1	U	AB	17
31	V	AB	16	21	R	W	22
32	V	W	58	22	R	RL	27
33	V	RL	15	22s1	U	AB	6
34	V	AB	16	23	R	W	19
35	V	W	52	24	R	RL	20
36	V	RL	11	24s1	U	AB	9
37	V	AB	14	25	R	W	12
38	V	W	32	26	R	RL	15
39	V	RL	10	26s1	U	AB	17
40	V	AB	14	27	R	W	17
41	V	W	22	28	R	RL	29
42	V	RB	26	28s1	U	AB	13
43	V	AB	5	29	R	W	18
44	V	W	19	30	R	RL	26
45	V	RB	25	30s1	U	AB	10
46	V	AB	9	31	R	W	22

Table 8.1. Continued

<i>Khipu UR53C/1000267</i>				<i>Khipu UR53B</i>			
<i>Cord Number</i>	<i>Attachment</i>	<i>Color</i>	<i>Value</i>	<i>Cord Number</i>	<i>Attachment</i>	<i>Color</i>	<i>Value</i>
Op5.25	V	W	16	32	R	RL	8
48	V	RL	26	32s1	U	AB	9
49	V	AB	11	33	R	W	24
50	V	W	21	34	R	RB	26
51	V	RB	27	34s1	U	AB	11
52	V	AB	11	35	R	W	23
53	V	W	18	36	R	RL	19
54	V	RB	20	36s1	U	AB	9
55	V	AB	10				
56	V	W	22				
57	V	RB	8				
58	V	AB	9				
59	V	W	21				
60	V	RB	16				
61	V	AB	50				

corded as either “V” (= verso) or “R” (= recto). As the direction of attaching subsidiary cords to pendant cords is not recorded for khipu UR53B (i.e., the sample in which every third member of a three-member/cord group is a subsidiary) subsidiary attachment types are labeled “U” (= unrecorded).

The attachment types V and R are actually opposite sides of the same coin. That is, a cord attached as V as viewed from one side of a khipu will appear as an R attachment if the sample is viewed from the opposite side (and vice versa). Thus, while these two khipu are, indeed, a “matching pair” insofar as the organization of colors and numbers are concerned, they only match if UR53C is viewed from the back (V) side at the same time one views UR53B from the front (R) side. In fact, if one viewed the two samples from the same side (i.e., both viewed from either the V or the R side), the numerical values of adjacent cords would not match as they do when their attachment type is opposite, as shown in table 8.1. Thus, the “pairing” of these samples only occurs when the khipus are placed (and viewed) in opposing orientations.

I believe that the orientation of cord attachments on these two khipus echoes that between the two halves (moieties) of Cuzco’s ceque system in which the hierarchical categories (collana/payan/cayao) of the three ceque sets in one half run in a clockwise direction, while those in the other half run counterclockwise.

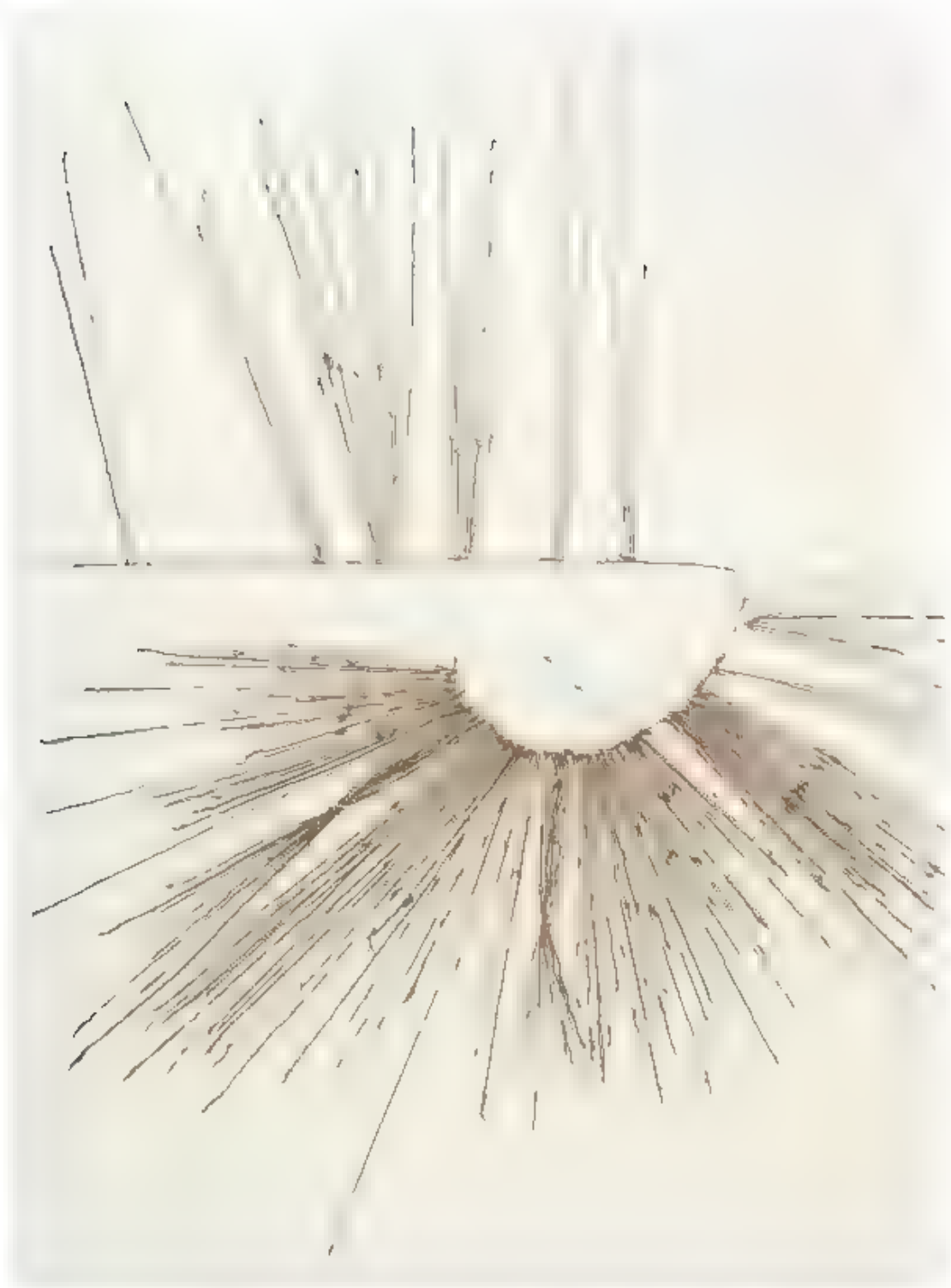


Plate 1. Khipu UR9 (author photo; courtesy of Centro Ma.lquí, Leymebamba, Peru.)

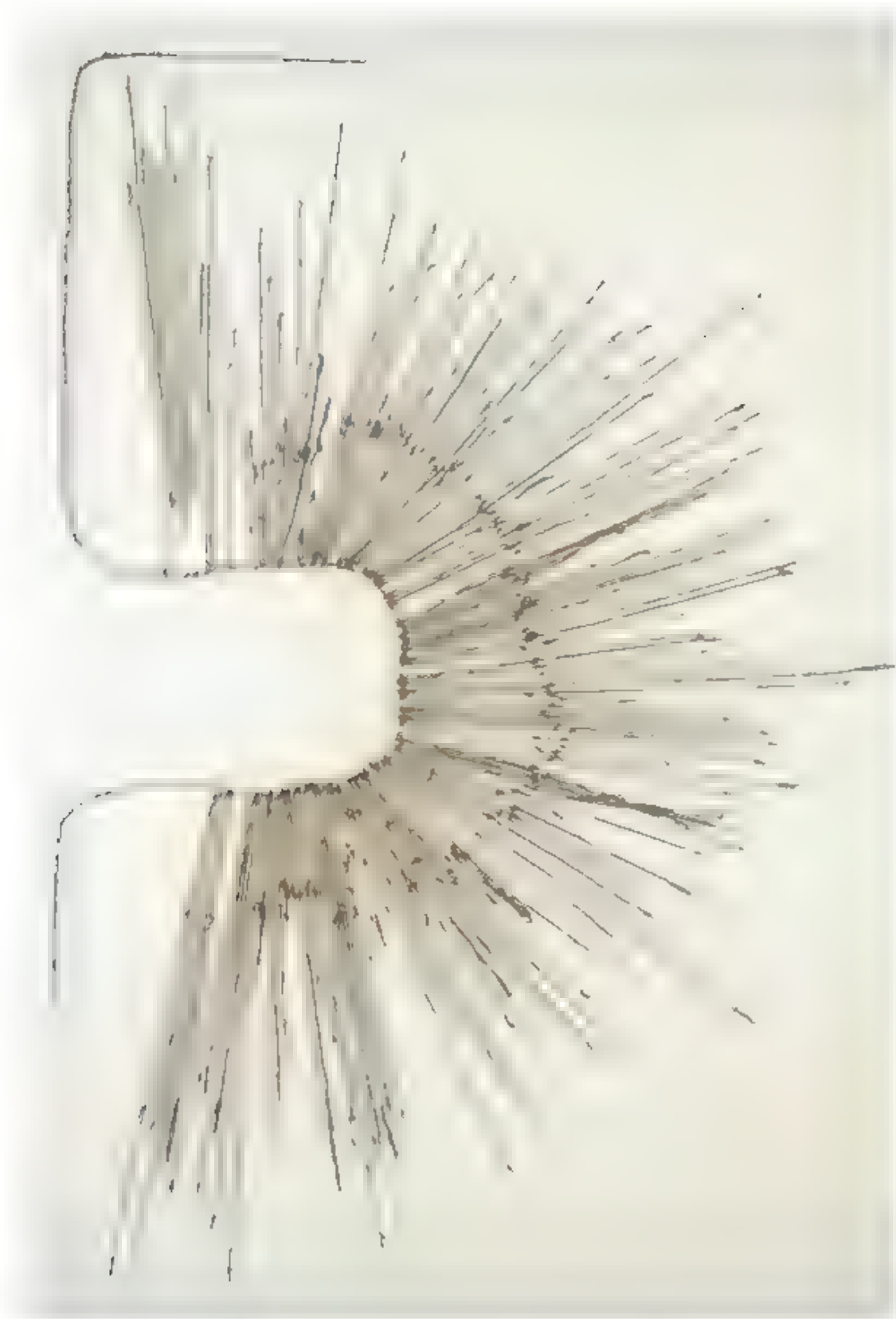


Plate 2. Khipu UR21 (author photo; courtesy of Centro Mallqui, Leymebamba, Peru)

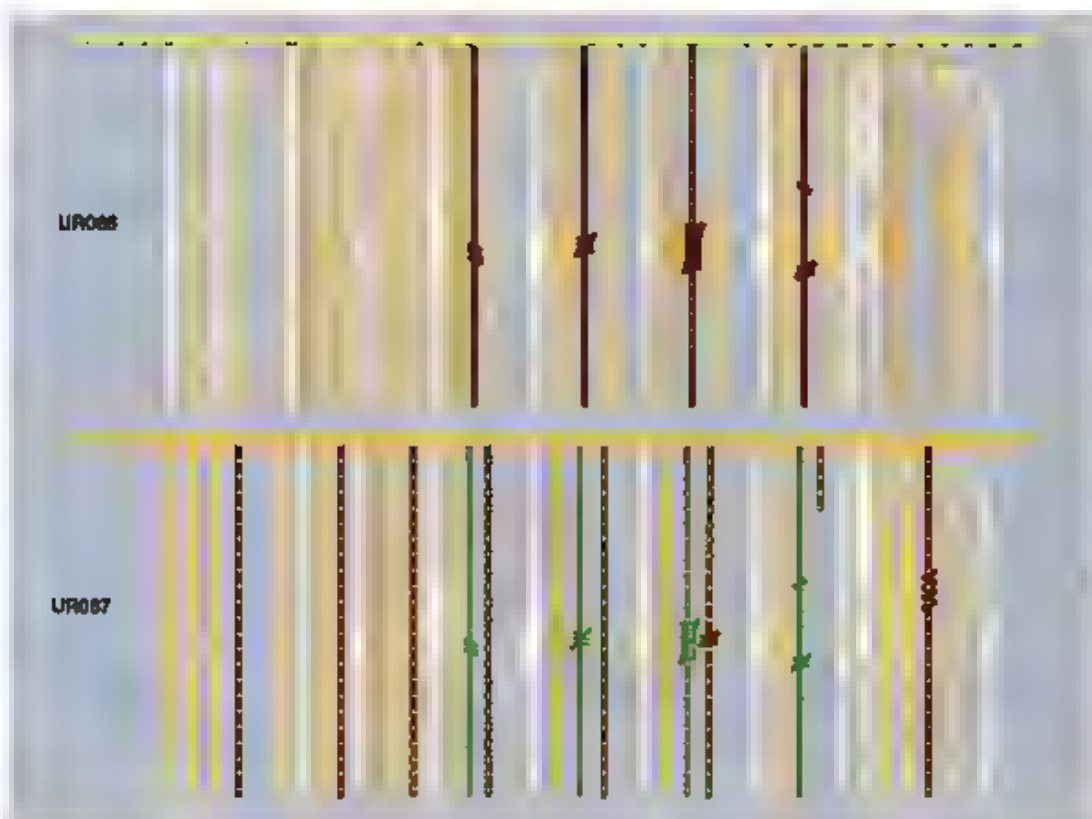


Plate 3. JR66 and JR67: a pair of level II khipus with introductory segments (drawing by Carrie J. Brezine; used by permission)



Plate 4. Khipu RN83950 from the Casa del Kipu deposit at Pachacamac (courtesy of Denise Pozzi-Escot, director, Pachacamac site museum; photograph by Rommel Angeles)



Plate 5. Khipu RN9027 from deerskin packet from the Casa de Kipu deposit at Pachacamac (courtesy of Denise Pozz Escot, director, Pachacamac site museum, photograph by Romme Angeles)



Plate 6. Linked set of five khipus (author photo; courtesy of Banco Central de la Reserva del Perú, Lima)

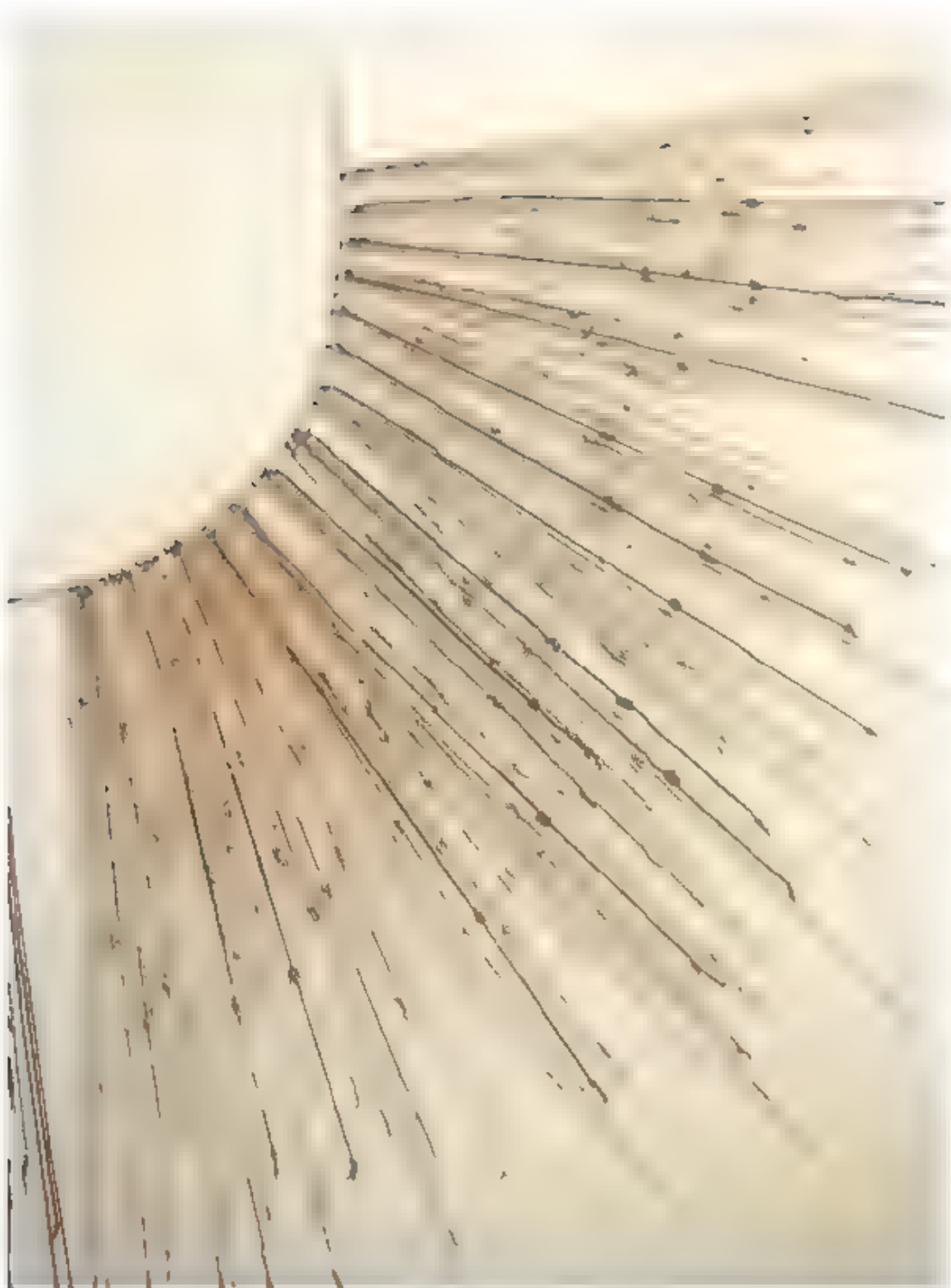


Plate 7. Section of *kn pu LR11* (author photo; courtesy of Centro Mallqui, Leymebamba, Peru)

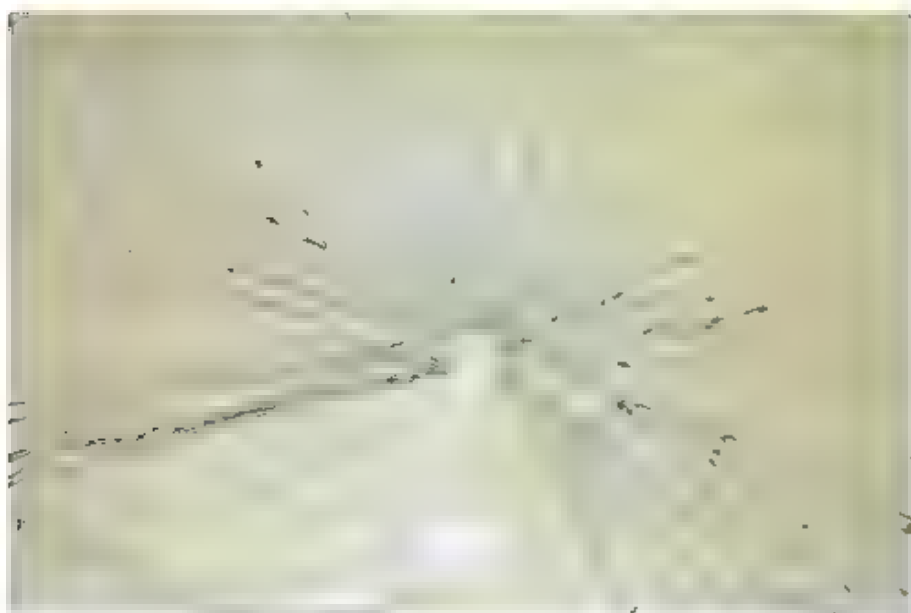
Plate 8
Khipu JR87



Plate 10
Khipu JR88



Plate 12
Khipu JR89



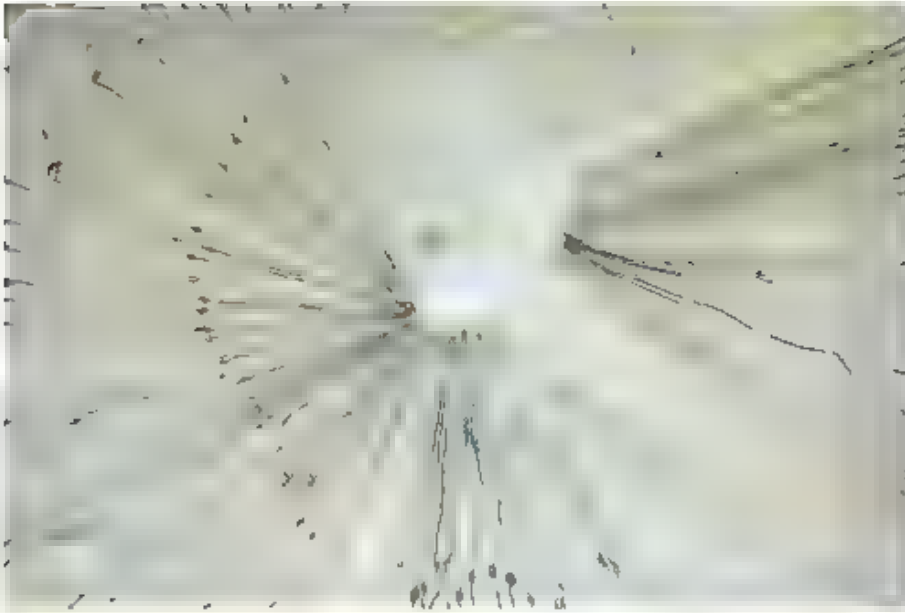


Plate 9
Khipu UR90

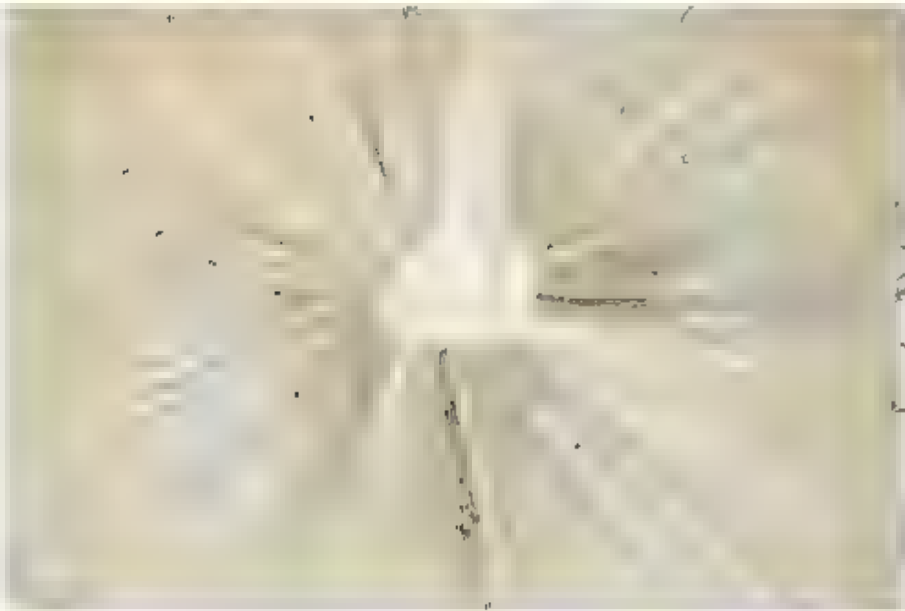


Plate 11
Khipu UR91



Plate 13
Khipu JR92

*Plates 8-13: author
photos; Fundación
Temple Radicati,
Universidad Nacional
Mayor de San Marcos;
courtesy of Dr. Manuel
Burga D., rector, 2006*




































































	1	2	3	4	5
A	W  white				
R		PK  pink	RM  moderate red SR  strong red	VR  violet deep red	
N			SB  brownish orange RO  grey reddish orange OR  deep orange	R  dark reddish orange	
Y		VY  pale yellow	SY  strong yellow OY  dark orange yellow		
G		PG  pale green	GG  grayish green	DG  dark olive green OP  dark grayish olive green VG  violet dark green YG  dark grayish green GR  dark green	
H		BL  pale blue	BG  grayish blue PB  deep blue GL  moderate greenish blue	TG  dark bluish green VB  violet dark blue GB  greenish blue LC  dark greenish blue	
B		YB  light yellowish brown BY  light grayish yellowish brown AB  light brown PL  light reddish brown GB  light grayish reddish brown	FR  strong reddish brown OB  moderate olive brown MB  moderate brown LB  deep yellowish brown BS  strong brown B  middle brown BB  yellowish brown RB  moderate reddish brown NB  strong yellowish brown CB  grayish yellowish brown	CB  dark grayish brown BB  dark grayish brown HB  grayish brown BB  dark yellowish brown KB  dark brown RB  grayish reddish brown PB  dark reddish brown DB  deep reddish brown DB  dark brown	
L		OL  light grayish olive	G  grayish olive green GR  grayish olive	OL  dark grayish olive DO  dark olive	
M		LG  light greenish gray	PG  greenish gray MG  medium gray LA  bluish gray	GV  olive gray P  dark bluish gray GA  brownish gray AG  dark greenish gray	
Z					BB  brownish black BK  olive black BB  black

Plate 14. Color chart

The Khipu Structure Applied to the Ceque System Structure

Given that colonial testimony notes that the ceque system was recorded on “a khipu,”¹⁴ how would such a complex network have been recorded on a cord account? I suggest, in fact, that the ceque system most likely was not recorded on a single khipu. Rather, I think it is highly likely that it would have been recorded on a pair of khipus—one for Hanan/upper Cuzco, and the other for Hurin/lower Cuzco (fig. 8.5).

Indeed, given what we have learned in preceding chapters about the various divisions of khipu data into moiety halves, the matching of data between different accounts, and, as we will see in chapter 9, paired khipus and the use of a pair of distinctive arithmetic paradigms, I think it highly unlikely that something as important as the ceque system would have been recorded on a single khipu. In fact, it is my contention that

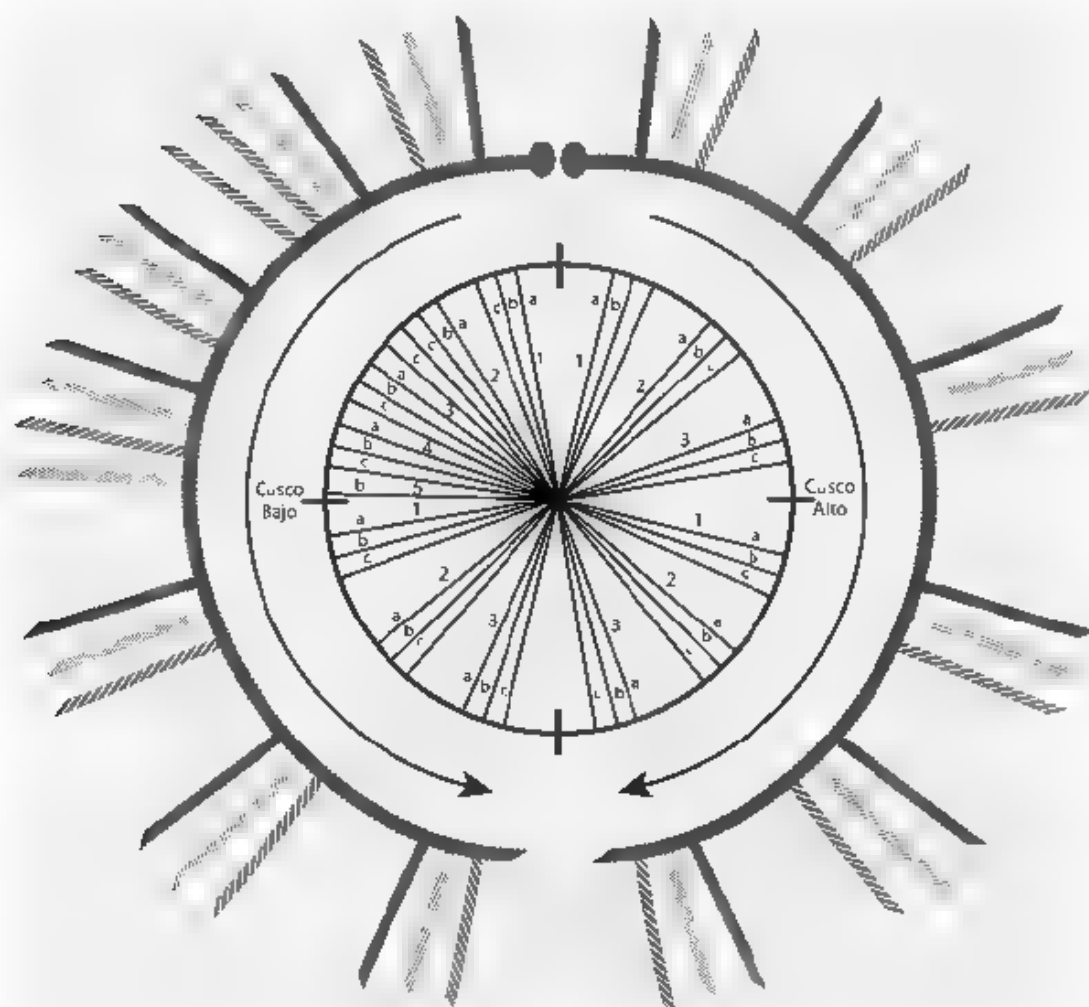


Figure 8.5. Pair of khipus with directionality compared to ceque system directionality (drawing by Carrie J. Brezine; used by permission)

recording such a ceque system – at the heart of the empire – on a single khipu would have been literally *unthinkable*, in Inka terms. I believe that such an arrangement would have “naturally” been recorded on a *pair* of khipus.

I think the head khipu-keepers of the ceque system—one from Hanan Cuzco, the other from Hurin Cuzco – would have constructed an arrangement of cords, knots, and colors akin to what we see in khipus UR53B and UR53BC, an arrangement built around a pair of khipus, representing the opposing directionality of hierarchical categories and structures between the moieties. I propose that a pair of cord devices like those we have examined here could have accommodated the recording of information, in semasiographic sign units and structural arrangements, of repeating, three-term hierarchical labels – represented in our pair of khipus by differences in cord color—in which the terms are oriented in a clockwise direction in one half/khipu and counterclockwise in the other half/khipu. Such an arrangement, constructed, maintained, and practiced or performed in the capital city on ceremonial occasions by a pair of khipukamayuqs, would have served as a paradigm for cord structures throughout Tawantinsuyu.

What is the relevance and significance of our khipu analysis for the recording of history? I think that the cord structures described above served as a framework for recounting the mythohistory of the empire. For it is just such a structural arrangement of categories, identities, and statuses that has been proposed as giving coherence and meaning to the mythic histories of Tawantinsuyu recorded in the Spanish chronicles.¹⁵ In fact, it is the pervasiveness of the structures, especially (but not only) the insistence on asymmetrical dualism (e.g., upper/lower; marked/unmarked) that constitutes a historical structure of the *longue durée* at the core of Inka civilization, connecting it with earlier societies and civilizations of the ancient Andean past.

The Political Significance of the Structures of Cuzco and the Structures of Recording

What is the importance of the structures of recording the ceque system and their relevance for communications that went on between Cuzco and the provinces? Here we are concerned with the issue raised in chapter 1 about the problem of action at a distance. As we have seen in previous chapters, and as we will explore later in chapters on accounting in state storehouses (chapter 9) and imperial census accounting (chapter

10), the nature and structures of *kipu* accounts recorded in the provinces involved detailed records of villages divided into *ayllus* and *moieties*, the latter signaled in the *kipus* by such recording measures as structural properties and color (e.g., chapter 3). Provincial *kipus* containing information on calendrical time and tribute labor were organized according to dual, asymmetric, and hierarchical categories (e.g., as we saw in chapter 4). This was the character of the accounts that came into Cuzco from the countryside. Arriving in Cuzco, the provincial accounts may have been inspected by the same imperial *kipukamayus* who were engaged in recording, reading, and performing the complex *kipus* of Cuzco's *ceque* system, the great synthesizing and synchronizing structure at the heart of the empire. The *ceque* system was the structure into which information from the provinces, from mythohistories to censuses, was fed, inspected, evaluated, and (if needed) transformed before it was returned—with any necessary editing performed by the *kipukamayus*—to state overseers in the provinces.

Critically, the structures of the *ceque* system and their registry in cord accounts was not “coincidentally” similar to provincial and village structures. Rather, the state, with Cuzco and its *ceque* organization at the center, exercised (or at least attempted to exercise) influence, power, and control over the imperial hinterland. Cuzco was at least theoretically the center for actions of control and surveillance that transformed conquered territories into the image of the center (e.g., we will see in the next chapter an Inka state facility that was explicitly built in the image of Cuzco).

In sum, in order to understand the structures and organizational principles of state power in Tawantinsuyu, we can do no better than to examine the *ceque* system of Cuzco, the contours of which would have been most impressively displayed and manipulated by the *kipukamayus*, most likely in a pair of *ceque kipu*s much like those analyzed here.

N I N E

Accounting in the King's Storehouse

INKAWASI, SOUTHERN COAST OF PERU

Several of the preceding chapters explored accounting practices in various places around Tawantinsuyu. A collection of thirty-four *kipus* excavated at the site of Inkawasi in the Cañete valley, on the southern coast of Peru, provides further insight into how state accountants organized and performed their work. This chapter will provide a detailed look at the accounting paradigms and practices of Inka administration evident in the Inkawasi *kipu* archive. These data give remarkable insights into Inka history, from decisions made on the spur of the moment, as accountants went about their business monitoring goods coming into and going out of the site, to the regulation of middle-range “conjunctural” accounting and other activities over the probably half century or so period of the Inka conquest and occupation of the southern coast, to recording practices and cultural principles embedded in *kipu* accounts that constituted core elements of the *longue durée* of Inka civilization. This material provides a sense of the grand sweep of Inka history and of the place of *kipu* record keeping in the management of Tawantinsuyu, at the level of human actors.

An Inka Military Installation and Accounting Center

The archaeological site of Inkawasi is located on the southern coast of Peru some twenty-eight kilometers up the Cañete River valley, on the left bank. The site is of impressive size, complex layout, and a good state of preservation (fig. 9.1). Inkawasi was the subject of commentary by archaeologists through the early to mid twentieth century,¹ and it was the focus of an extensive program of survey and mapping by US archaeologist John Hyslop from 1979 until 1983.²



Figure 9.1. Inkawasi: site plan (drawing by Julia L. Meyerson; used by permission)

Inkawasi (or Incahuasi; Quechua “Inka house”) is described in the chronicles of Cieza de León (1553) and Garcilaso de la Vega (1609). Cieza, whose earlier and probably more authoritative account states that Inkawasi was built as a staging area for the Inka conquest of the southern coast, notes that the site was designed specifically to support the defeat of the bellicose Huarco people. Both Cieza and Garcilaso note that Inkawasi was built on the model of Cuzco, the Inka capital. In the first part of his *Crónica general*, writing in 1553, Cieza de León remarks that “[the Inka] built a new city, to which he gave the name of New Cuzco, the same as his main seat. They also tell that he ordered that the districts of the city and the hills should have the same names as those of Cuzco.”³

In the second part of the *Crónica general*, Cieza de León goes on to recount what occurred at the end of the war against the Huarco: “Peace having been restored to the valley, and *mitimaes* [workers transplanted from elsewhere in the empire] and a governor sent there, [and] after receiving the embassies the Yungas [coastal peoples] and many of the mountain folk sent him, he ordered the New Cuzco he had built razed, and with all the army he returned to the city of Cuzco.”⁴ If Cieza was correct in describing the destruction of the site at the end of the war against

the Huarco (an act not included in Garcilaso's account), we would not be surprised to find evidence for widespread and fairly rapid destruction. Alternatively, and moving the time of any potential razing somewhat later, D'Altroy and Earle have noted, citing Pedro Sancho's account of 1532–1533, that the Inkas considered storehouses to be an important military target of the Spaniards and, therefore, they destroyed all warehouse complexes as they retreated before the Spanish invasion.⁵ There is evidence of burning in certain parts of the site and excavations revealed artifacts buried under collapsed walls, but the condition of the ruins today does not support the notion that Inkawasi was “razed” by the Inkas.

Because of the intense interest invested in Inkawasi by the Inka state during the apparently rapid construction and relatively brief occupation of the site, it is reasonable to suppose that considerable care and attention would have been accorded to its development, at least initially. The site has revealed well preserved ruins of large and finely made residential sectors, a palace with an *ushnu* (ceremonial enclosure with seat/throne and a hole for offerings to the earth), and a massive storage facility containing hundreds of storage bins (*qollqa*[-s])⁶

The collection of *kipus* excavated from the storage facility by the Peruvian archaeologist Alejandro Chu, in 2013 and 2014, is the focus of this chapter.⁷ Chu recovered a total of thirty-four *kipus* from various locations within the storage complex, referred to as *Qollqawasi* (storehouse). A list and descriptive overview of twenty nine of the Inkawasi *kipus* (several were too fragile and/or fragmentary to permit study) is given in the appendix to this chapter.

Qollqawasi and the Inkawasi Khipu Archive

The storage complex of *Qollqawasi* is shown via balloon photography in figure 9.2, and in schematic plan in figure 9.3. It is built on a grid scheme, with a set of six rectangular structures on the north end, a group of thirty-six large, open rectangular storage chambers lie in the center of the facility, through which runs a north/south path; and some 209 small, square storage bins are arrayed around the west, south, and east sides of the structure. It has been estimated that when in full use, *Qollqawasi* contained some 6,400 cubic meters of storage space.⁸

Immediately to the north of the *Qollqawasi* building, separated from the storage complex by a narrow corridor, is a set of rooms flanking two sides of a trapezoidal plaza/patio, designated Sector C (following Hys-

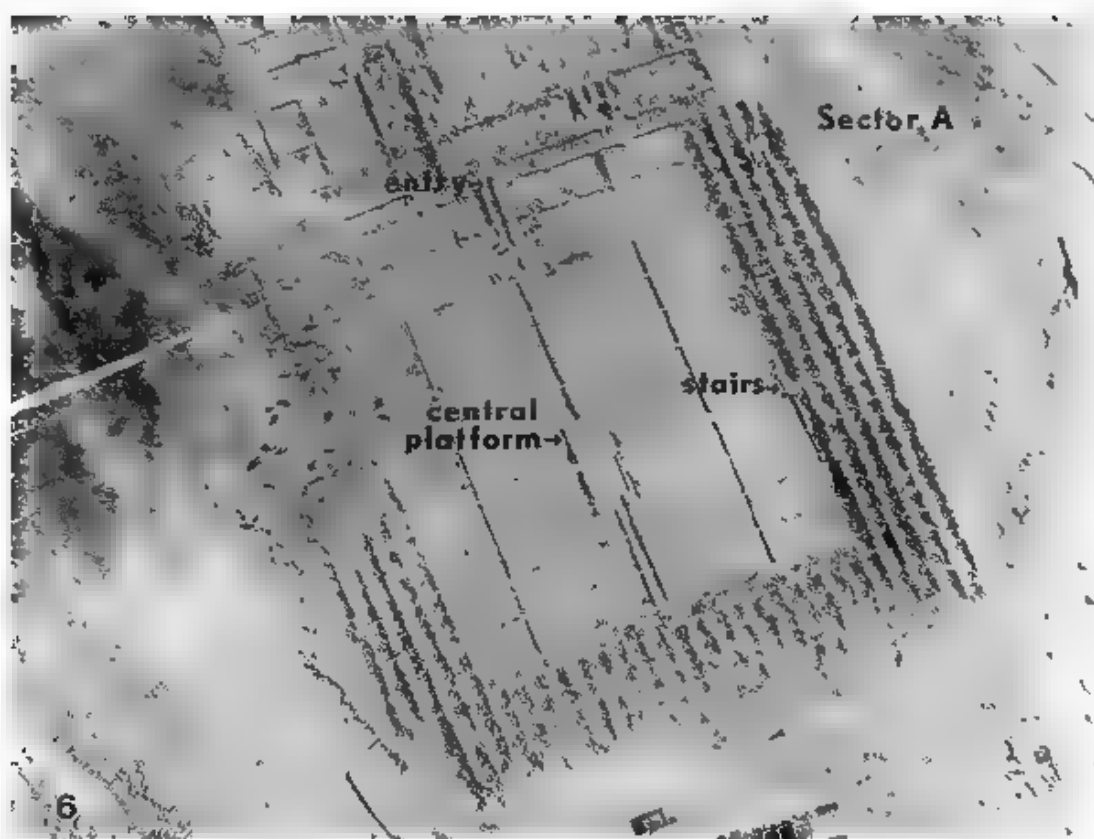


Figure 9.2. Qo qawasi (after Hyslop 1985)

lop's site sectorization; see fig. 9.1). In the middle of the plaza in Sector C are the foundations of a second *ushnu*, along with the foundations of several round columns set along the south side of the plaza/patio; these columns are thought to have supported a roof. This complex of rooms, adjacent to Qolqawasi, has been interpreted as a Temple of the Sun.⁹ It is unclear what its relationship might have been to Qolqawasi, as there is no direct access from one area to the other (each complex had only one entryway, in both cases on the north side).

Figure 9.2 shows the narrow east-west corridor (*corredor*) running along the northern edge of the storage facility, between the Temple of the Sun and the north end of Qolqawasi, as well as the opening from it into the long north-south corridor that transects Qolqawasi's thirty-six rectangular storage chambers and served as the main access into the storage facility. The structures at the north end of Qolqawasi consist of (a) four *kallankas* (U.A. 01, U.A. 02, U.A. 04, U.A. 05), rectangular structures that were probably roofed; and (b) two "sorting spaces" (Chu's term) (U.A. 07 and U.A. 08), which were probably unroofed.

While excavating the floor of the rectangular space designated U.A. 07, Chu and his team exposed a grid-like arrangement of squares laid out in its surface of mud.¹⁰ The same grid pattern was found in U.A. 08;

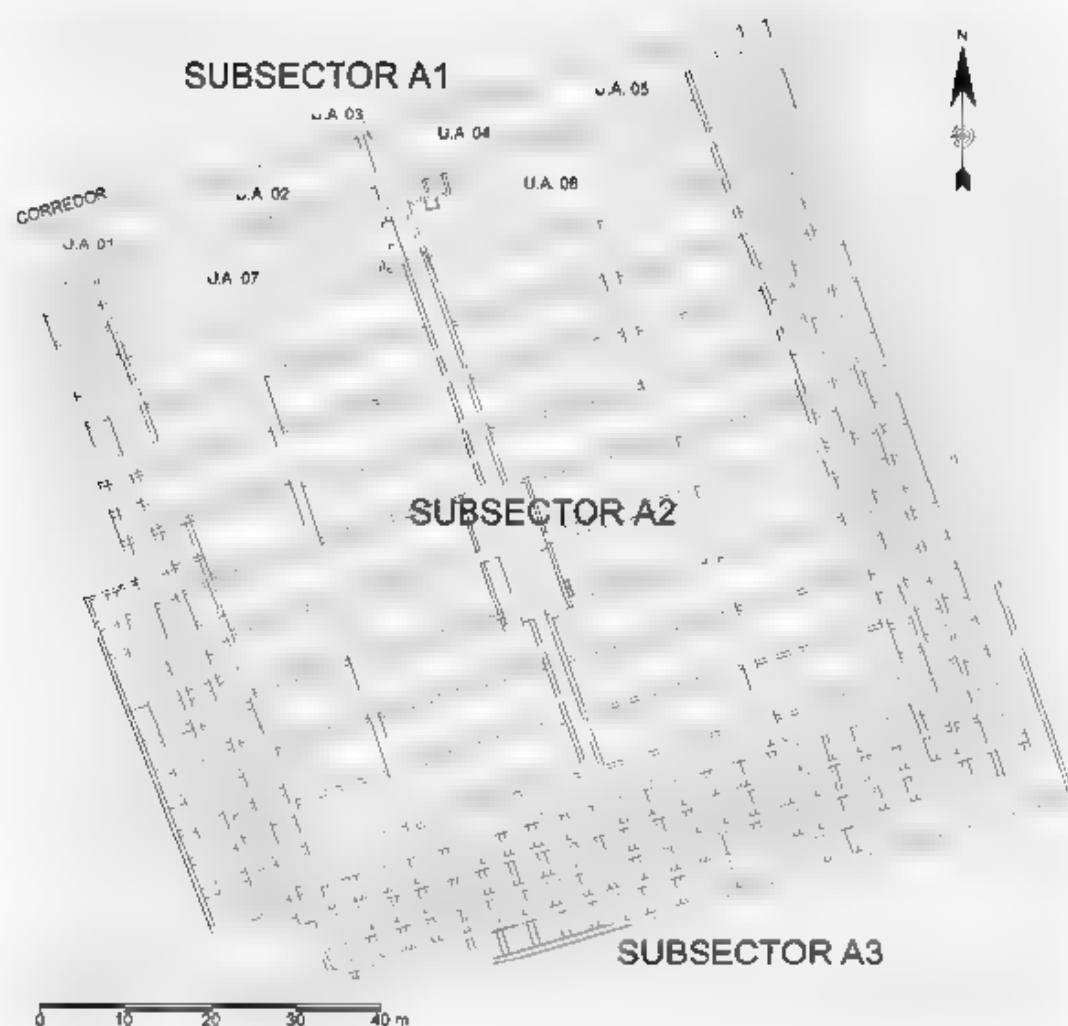


Figure 9.3. Plan of Qolqawasi (drawing by Alejandro Chu, used by permission)

however, these were poorly preserved, as modern occupation and wind erosion had removed almost all of the latter structure's mud floor. The lines forming the squares on the floor of U A. 07 were made by impressing ropes into the damp mud of the floor (one can still view the oblique S-twist of the fibers composing the ropes). The squares all measure very close to what we could term a standardized measurement, 23×23 cm. The squares were laid out on the floor in what Chu and I have termed "grid panels," each three squares wide by thirty-nine squares long. Each grid panel is therefore composed of 117 squares ($3 \times 39 = 117$). A narrow walkway separates adjacent grid panels on the floor. Chu estimates that there were some thirty grid panels laid out on the floor of U A. 07, producing a total of 3,510 squares ($117 \times 30 = 3,510$) across the entire floor area. This arrangement was presumably repeated in structure U A

08, the rectangular “sorting” space across the central axis from U.A. 07; however, nothing remains of the (supposed) grid in that space

Chu and I believe that the northern rooms and open spaces of Qolqawasi were sites of the receiving, recording, and temporary storage of goods coming into the site. Llama caravans laden with produce or goods destined for storage would have entered the site along the northern corridor and transferred their cargos into the kallankas, where initial accounting may have been carried out. The items to be stored—primarily agricultural produce, including maize, beans, peanuts, chili peppers, and other products—were then moved to the “sorting spaces,” where they would have been spread out on the hard packed surfaces marked off in the grid-like arrays of squares described earlier. The “sorting” probably involved separating items into standardized accounting units determined by the grids on the floors. Following the sorting into standardized units, a final accounting would take place, including the recording of the units inventoried on *kipus*, and the items would then be moved into the appropriate storage chambers, or bins, in the southern section of the complex.

Chu began his excavations in what is now understood as the northern corridor of Qolkawasi, where he first encountered a pile of seven *kipus* covered by adobe and rubble from the northern wall, which had collapsed, or had been pulled down, into the corridor. Two of the *kipus* included in this pile—UR255 and UR256—were found with their primary cords tied together. Chu subsequently excavated twenty seven additional *kipus* from the floors of the kallankas and sorting spaces inside Qolqawasi, for a total of thirty-four *kipus*.

One especially interesting aspect of the *kipus* is that several were found in association with food crops. For example, two *kipus*—UR267A and UR267B—were in the “sorting space” U.A. 07, tied together by their primary cords (like the pair found in the corridor), having been placed inside a rectangular basket and covered with chili peppers. One *kipu* (UR271), excavated from the floor of kallanka U.A. 05, was under about two handfuls of black beans (*Phaseolus vulgaris*). I assume that this particular *kipu* was used in keeping track of totals of black beans, although there is nothing obvious about the appearance, recorded numbers, etc., of the sample that points clearly to a “bean [counter] connection.” An additional fourteen samples were heaped together in the southwest corner of kallanka U.A. 05 and covered with peanuts.

The *kipu* archive at Inkawasi provides us with an unprecedented

opportunity to view *kipus* in an almost pristine context and to determine the accounting methods that were in use apparently at the time of the abandonment of the site. First is a look at the possible origin of any plant products brought into Inkawasi for storage during the Inka's campaign against the Huarco.

The Source of Agricultural Produce Stored in Inkawasi

From where and by whom was the produce deposited in Qolqawasi obtained? This question raises the issue of land tenure in the empire. Who owned the land and therefore had rights to the production of crops on it? As noted in chapter 2, not only all land but everything—humans, animals, plants, and minerals—in Tawantinsuyu belonged to the Inka. More specifically, as we learn from Cobo:

When the Inca settled a town, or reduced one to obedience, he set up markers on its boundaries and divided the fields and arable land within its territory into three parts, in the following way: One part he assigned to Religion and the cult of his false gods, another he took for himself [i.e., the civil government], and a third he left for the common use of the people. It has not been possible to determine whether these parts were equal in any towns and provinces. . . .

In these lands assigned to Religion and to the crown, the Inca kept overseers and administrators who took great care in supervising their cultivation, harvesting the products and putting them in storehouses. The labor of sowing and cultivating these lands and harvesting their products formed a large part of the tribute which the tax-payer [i.e., tribute laborer] paid the king.¹¹

Cobo continues, later in the same chapter: "These storehouses were always very well supplied because ordinarily there was food gathered from ten or twelve years back. There were in these storehouses and warehouses inspectors, overseers, and accountants for the administration of the royal goods; these officials kept careful records of all goods received or consumed."¹²

From the testimony of Cobo and other chroniclers, we can be fairly certain that the agricultural produce stored in a military installation, such as Inkawasi (which would no doubt have also housed clothing, armaments, and other manufactured products), would have come from the fields of the Inka. In the case of Inkawasi, the fields would likely have been located within the Cañete valley, both upstream and downstream

from the settlement, where there are extensive storage chambers (Larry Coben, personal communication, 2015), as well as from neighboring valleys to the north and south; however, we do not have evidence to allow us to state precisely where the produce that was stored in Inkawasi actually came from. A more useful question to address is how the *kipukamayus* who were assigned to Inkawasi constructed their cord accounts

Inkawasi Accounting Methods

Several accounting techniques are evident at Inkawasi. These include: summing within individual samples; calculations using what I term “fixed numbers,” which may constitute something like levies, or taxes, on stored produce, the making of copies of accounts, which may be a form of checks-and-balances “bookkeeping”; tying *kipus* together to produce “linked” accounts (seemingly akin to our method of filing related accounts in the same folder), and the recording of accounts according to two different formulas, or what I will term “arithmetic paradigms.”

Internal Summing

The technique termed “internal summing” involves organizing the cords of a *kipu* in series, or sets, containing between four and eight cords per set; the “first” cord of each set records not only the largest value in the cord set, but also the sum of the values detailed on the other cords of the set. But how do we establish which is the “first” cord of a set? Reading *kipu* pendant strings along the primary cord in the “traditional” manner, which begins with the end of the primary cord that is knotted and is immediately adjacent to pendant cords (the opposite end—known as the “dangle end” – usually has a large empty space, containing no cords, extending from the last pendant cord to the end knot), one reads the cords from left to right (the KDB software allows us to examine the cords in reverse order, in the event that that was the intended recording/reading order)

In *kipus* containing internal summing, the following arrangement is apparent within the four-to-eight cord sets: first, a large sum, second, one or another of what I term “fixed values”, and finally a number of additional cords knotted with varying values. The sum of values on the cords of a set following the first cord usually sum to (or close to) the

Table 9.1. Cord series from khipu JR268 containing the repeating value 208

Cord #	Value	Sum	Cord #	Value	Sum
1	13,328		43	12,608	
2	20[8]*	13,328	44	[208]*	12,608
3	1,450		45	1,659	
4	2,174		46	10,741	
5	1,935		47	13,162	13,028
6	7,561		48	208	
7	8,149	8,225	49	2,460	
8	208		50	209	
9	317		51	10,151	
10	1,345		57	7,135	7,069
10s1**	209		58	20[8]*	
11	1,546		59	2,070	
12	4,600		60	505	
13	8,173	8,121	60s1	1	
14	208		61	113	
15	1,739		62	1,583	
16	6,174		63	2,258	
21	15,039	15,219	64	331	
22	208				
23	500				
23s1**	2[00]*				
24	14,311				

*partially or completely broken cord

**subsidiary cord

value knotted on the first cord. Examples of internal summing, with the fixed value 208, are given in table 9.1; the cord account referenced is khipu UR268 (fig. 9.4), one of the fourteen khipus found in kallanka U A. 05 that were covered with peanuts.

A word about “fixed values” is in order. Several of the khipus from Inkawasi display one or another of four fixed values, which are repeated, usually in a certain position (as we see with the value 208 in table 9.1) across a khipu. These four fixed values are 208, 47, 15, and 10. I do not know exactly what these values represent, or how they were determined, but I strongly suspect that they represented something like a

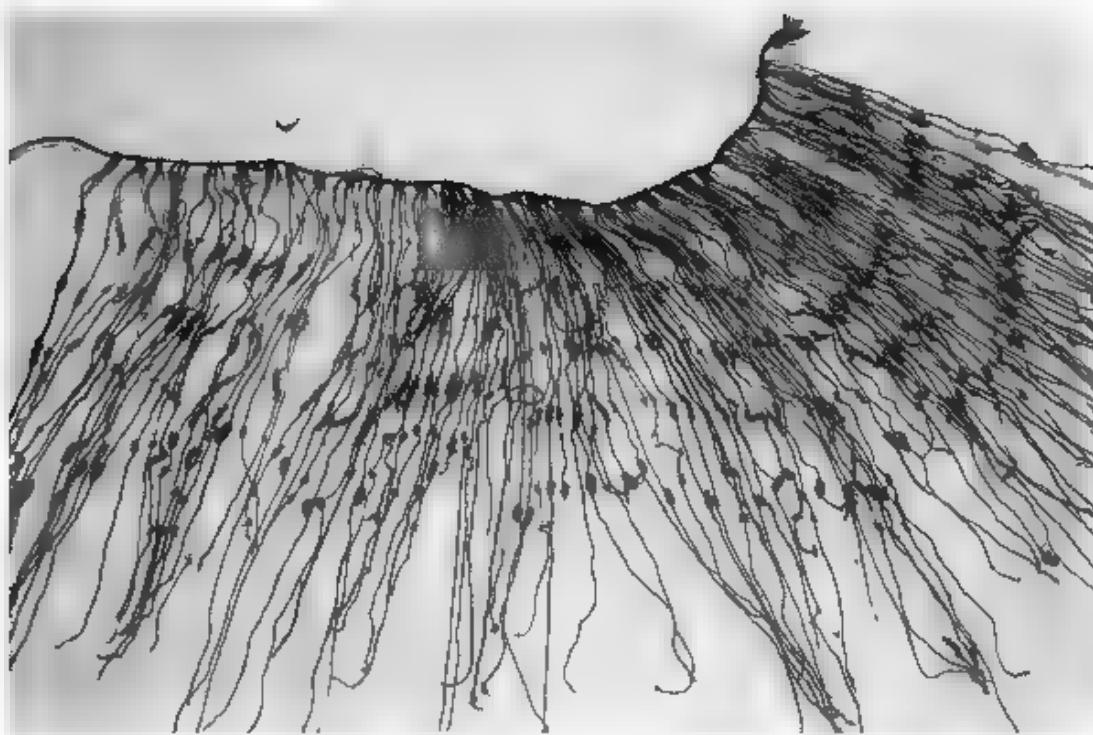


Figure 9.4. Khipu LR268 (author photo; courtesy of Alejandro Chu, research funded by the Gobierno Regional de Lima, 11/2102–12/2014)

tax, or levy, on deposited goods whose purpose was the support and maintenance of the site, including its workers and administrators.

To return to table 9.1, while I do not know precisely what this accounting record referred to (as we cannot read “identifier” labels in khipus), since this khipu was found (along with thirteen others) buried under peanuts, it is reasonable to suppose that the values relate to the accounting of units of peanuts stored in Qolqawasi. Perhaps the large number (i.e., on the first cords of sets) in each set was a total of units of peanuts in a given deposit, the fixed/repeating value 208 could have been something like a tax on the deposit, perhaps an amount of goods to be removed from the deposit and used for the support and maintenance of the storage facility. The values on cords following the fixed value 208 could have referred to items that came from different sources, or to a (re-)distribution of allotments to different storage bins, or perhaps they were allotments dispersed from the facility to the Inka troops. The numerical values in groups of cords in khipu UR268 suggest that large sums were being recorded and that those sums were then subdivided into smaller units in an accounting procedure aimed at (a) summing to a total value, and (b) repeatedly factoring in a “fixed value.”

Each one of the sets of figures featuring internal summation might be considered as notes for an accounting (history) statement. For example,

we can construct the following narrative for the cord series including cords #1–#6 in table 9.1

This is an accounting of 13,328 units of XXX stored in the depository in Inkawasi. Two hundred and eight of those units were set aside as a maintenance fee; of the remaining units of XXX, 1,450 units were placed in one deposit, 2,174 units were placed in another deposit, 1,935 units were placed in a different deposit, and the remaining 7,561 units were placed in a different deposit from the others.

Another feature of the figures in table 9.1 is that the sums don't always "add up" to the initial value recorded on the first cord of a set. Perhaps this represents units of produce that went missing from the original count—a kind of "leakage" of stored produce—or perhaps it reflects the kind of "noise" of on-the-ground accounting, as we saw in the lowest level of the accounting hierarchy at Puruchuro (chapter 5).

A second example of internal summing appears in table 9.2. This *kipu*, UR275 (fig. 9.5), was also among the group of fourteen *kipus* covered with peanuts. As is evident in table 9.2, UR275 shows the fixed value 47.

Why the switch in the fixed value from 208 to 47? For one thing, the values recorded in *kipu* UR275 are generally much lower overall than those in the earlier *kipu*, UR268. For instance, the cord #1 values in UR275 are between 1,653 and 3,317, whereas the cord #1 values in UR268 are between 7,135 and 15,039. Perhaps therefore, the lower fixed value on UR275 is coordinated with the generally lower values on the other cords in these cord series. The odd thing here is that both of these *kipus* were among the fourteen *kipus* found covered with peanuts, in the corner of excavation unit U.A. 04. Therefore, it does not seem likely that varying fixed values would have signaled a difference in the items the two *kipus* were constructed to account for (assuming that all *kipus* covered with a certain product were used in accounting for that product). Perhaps, instead, the difference in fixed values is related to some other status difference in the items recorded in these two samples? For instance, perhaps the two *kipus* accounted for peanuts that came to Inkawasi from two different fields of the Inka, one of which was considered of higher value or status than the other. While such a circumstance could conceivably have been the case, we are nonetheless far from having any documentation on which to evaluate such speculation.

A couple of interesting numerical patterns emerge in the two sections of *kipu* UR275 shown in table 9.2. At the beginning of the *kipu* (i.e.,

Table 9.2. Runs of cord values on khipu UR275 showing the fixed value 47

Cord #	Value	Sum	Cord #	Value	Sum
1	3,317		78	2,106	
2	47		79	47	
3	114		80	460	2,106
4	498	3,316	81	1,599	
5	370		82	1,653	
6	2,287		83	47	1,653
7	2,089		84	1,606	
8	47		85	1,737	
9	203		86	47	1,737
10	236	2,090	87	1,690	
10s1*	21		88	1,825	
11	312		89	47	1,827
12	1,271		90	1,780	
13	1,842		91	1,780	
14	47		92	47	1,780
15	342	1,842	93	1,733	
15s1*	11				
16	1,442				

*subs d'ary cord

cords #1 #16), each series of cords begins with a large number, which is followed by 47, followed, in turn, by four to five additional numbers, the final one of which is another large number. The values registered from the cord bearing value 47 to the end of each series sum (or nearly sum) to the value on the first cord of each set. Later in the khipu (i.e., cords #78 #93), we see essentially three-cord sets; these have the following values: a large number, the fixed value 47, and the difference between the first value and 47. Here, the issue seems to be one simply of registering the large sum, removing the levy or tax (or whatever 47 represents), and noting the result of the subtraction.

Whatever the magnitude of the fixed value, these two khipus display what appear to be examples of one of the accounting methods employed by khipukamayusqs for rectifying accounts, for consistently stipulating a levy/tax-like value on deposits, and for generally keeping track of items on deposit in the Qolqawasi facility

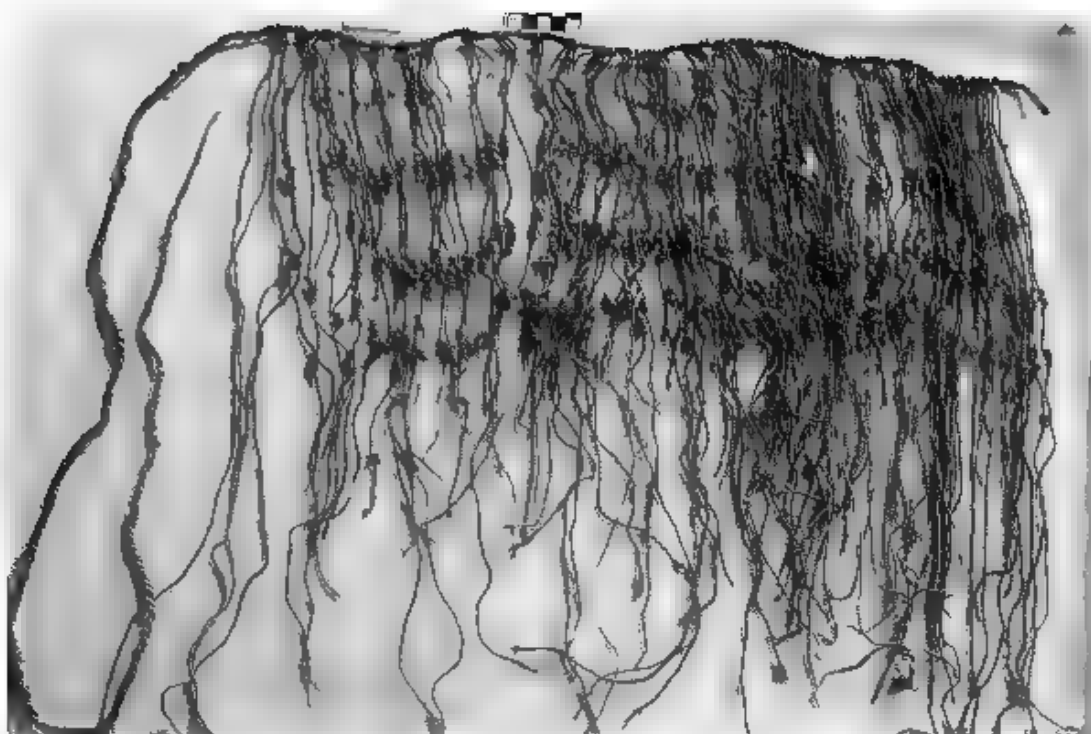


Figure 9.5. Khipu LR275 (author photo; courtesy of Alejandro Chu, research funded by the Gobierno Regional de Lima, 11/2102–12/2014)

There is evidence of summing within khipus in other settings around the empire, as well as the remarkable example of summing *between* khipus (i.e., the sums of values on one khipu registered on a different khipu; see chapter 5) in the Puruchuco accounting hierarchy. I regard the internal summing of values on khipus to be an important and efficient technique for accounting, although it is not a terribly complicated one. It was—we might say, a sort of baseline strategy for registering values produced by arithmetic calculations (which were carried out on the calculating device, called *yupana*; see chapter 1) that was an important feature of checks-and-balances accounting at Inkawasi.

Copies or Matching, Closely Matching Khipus

The Inkawasi khipukamayus copied accounts as part of a portfolio of checks-and-balances accounting practices. We have seen examples of matching and/or closely matching khipus (i.e., copies) in the archives at Laguna de los Cóndores (chapter 4), Puruchuco (chapter 5), and Pachacamac (chapter 6). We also have several examples of copies, or matching/closely matching, khipus at Inkawasi. What was the relationship between what appear to be copies when two (or more) accounts were produced? Might they have been produced more or less at the same

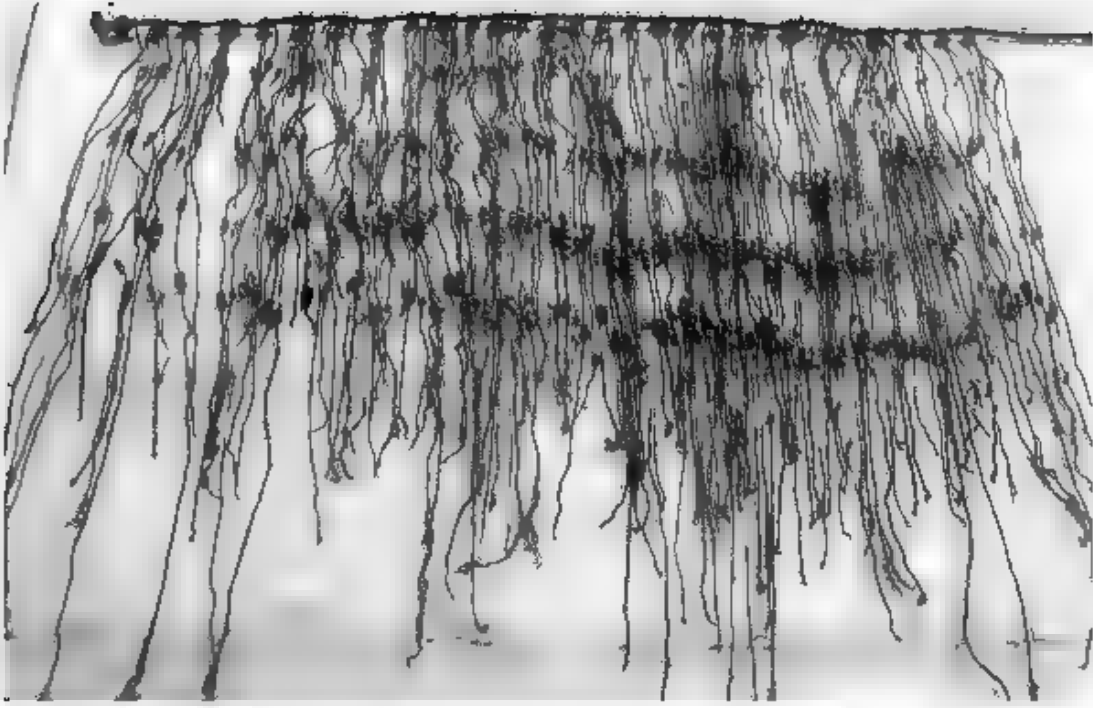


Figure 9.6. Khpu UR266 (author photo; courtesy of Alejandro Chu, research funded by the Gobierno Regional de Lima, 11/2102–12/2014)

time by two *kipukamayus* observing the same accounting event and recording the proceedings on behalf of their particular interest group (e.g., an *ayllu* or moiety)? Or could the two versions have been produced sequentially, at different times? For instance, was one version made when the goods arrived at the facility and the other, the so-called copy, made when the goods left the storehouse? If the latter were the case, this would constitute something akin to the balancing of credits and debits. This would suggest that the Inka accounts had developed—or were in the process of developing—a double-entry-like accounting technique (see below).¹³

One pair of a set of “closely matching” *kipus* is UR266 (fig. 9.6) and UR275 (fig. 9.5; discussed above). These are two more of the fourteen samples found in a heap in kallanka U.A. 05 and covered with peanuts. Table 9.3 shows only the numerical values above 1,000 (i.e., from the large-sum cords) that are knotted into these two samples.

There is a total of forty-three values displayed in the respective columns for the two *kipus* in table 9.3. Of the forty-three values, eighteen are exact matches between the two columns, eight values are what I would term “close matches” (i.e., 1,732/1,786, 2,114/2,106, 1,594/1,599, 1,850/1,844, 2,227/2,247, 2,177/2,200, 1,765/1,760, 1,718/1,710); the remaining fifteen values in the UR266 column and the sixteen values in the

Table 9.3. Numerical values above 1,000 in closely matching kh pus JR266 and JR275

UR 266	UR 275
3618	3317
1364	2287
2207	2089
1506	1271
1384	1842
2919	1442
3317	1876
1070	1545
1217	3249
2089	2229
1271	1786
1842	3320
1876	2333
1151	4273
3249	2710
2069	2633
2229	3096
1732	2896
3320	2950
2500	2451
4273	2275
3300	1870
2633	1278
3096	2020
1323	1035
2950	1588
2275	2106
1278	1599
2114	1653
1594	1606
2106	1737
1153	1690
1737	1825
1690	1780
1939	1733
1850	1891
2227	1844
2177	2247
1765	2200
1718	1760
1505	1710
1458	1505
1738	1458

Legend: — Exact Match - - - - - Close Match

UR275 column do not have matches or close matches—at least not obvious ones. But we should note that two values in the UR266 column [1,070 + 1,217] sum to the one value 2,287 in the UR275 column, and about three-quarters of the way down the two columns, the values 2,106 + 1,153 in the UR266 column and the values 1,653 + 1,606 in the UR275 column both total 3,259. Thus, there is a high level of matching values between the two columns of 1,000+ values recorded on these two *kipus*.

What the two columns of numbers in table 9.3 do not show (as I have given only values above 1,000) is that these two *kipus* both contain the fixed, repeating value 47. In table 9.2, we saw a couple of runs of cord sets with fixed value 47 from *kipu* UR275 (the *kipu* from which the string of high values in the right-hand column of table 9.3 were taken).

As for the relationship between the two *kipus* UR266 and UR275, whose large values are shown in table 9.3, it is important to note that their large sums are in some cases exact matches, in other cases the values are only close matches, while some of the values do not match even closely. What are we to make of this pair of samples? In the first place, the occurrence of eighteen out of forty-three values above 1,000 that exactly match between the two accounts, and an additional eight values that match very closely, is well beyond what we might expect from chance; in short, the registries in the two samples were clearly made within the same accounting context. This conclusion is further supported by the fact that out of the total archive of thirty-four *kipus* found at Inkawasi, these are the only two that contain the fixed, repeating value 47. Thus, undoubtedly there is a high level of intentionality in the production of this pair of matching/closely matching “copies.” But what does this mean? What might account for the high percentage of matching values (starting with 47 and going into the thousands) and closely matching values recorded on the two samples?

There are two possible answers. In the first place, these two *kipus* may have been records of some accounting circumstance (e.g., the receipt of a large shipment of peanuts into Inkawasi) in which two accountants were assigned to record the deposit of goods (as we have seen, dualism was a fundamental feature of Inka social, political, and economic organization). In this case, perhaps the two accountants simply recorded different values, while achieving a high level of similarity in their overall records. The second possible explanation, which I have developed more fully elsewhere,¹⁴ is that we may see in such a pairing of accounts something approaching an Inka double-entry-type “bookkeeping”—i.e., in the absence of actual “books”! That is, perhaps

one of the two khipus (e.g., UR266) was a “credits” registry of goods coming into Inkawasi, while the other account (UR275) was a “debits” registry of items moved out of the storehouse. Unfortunately, we cannot determine whether this was the case, as we don’t know exactly when the two records were made—that is, whether they were made simultaneously or sequentially.¹⁵

*Linked and Matching Khipu Pairs and the Use of
Reciprocal Arithmetic Paradigms*

In addition to internal summing, fixed numbers, and the production of copies, we also find another complex accounting method employed at Inkawasi. This involved tying two or more khipus together, an arrangement I refer to as “linked khipus” (see chapter 3, concerning the linked khipu set from Atarco, Nazca). At Inkawasi, we have two linked pairs of khipus; these are UR255 and UR256 (fig. 9.7), whose primary cords are tied together, and UR267A and UR267B, which are also tied together (fig. 9.8). What is particularly interesting about these two linked pairs is that they also represent components of matching/closely matching pairs. One khipu in each linked pair matches a khipu in the other linked pair and vice versa, in other words the match/copy was with a khipu in the other linked pair. To clarify, as we view the two linked khipu pairs in figures 9.7 and 9.8, the numerical values registered on khipu UR255 closely match those recorded on UR267A, while the values on UR256 closely match (although less so than in the former “match”) those recorded on UR267B. Figures 9.7 and 9.8 are oriented to show that the two khipus on the left side of each pair closely match each other, as do the two on the right side.

What is extraordinary about these two linked and matching pairs is that they employ different, reciprocal arithmetic paradigms, or formulas (see below). In addition, the two matching pairs use two different “fixed numbers;” in this case, the UR255/UR267A matched pair has the fixed value 15 and the UR256/UR267B matched pair has the fixed value 10. All the accounting methods discussed above, except internal summing, come together in these linked and matching pairs.

The linked pair UR267A and UR267B was found in sorting space U.A. 07 tied together, placed in a rectangular basket, and covered with chili peppers. The linked pair UR255 and UR256 was found tied together in the pile of seven khipus recovered from the corridor on the northern

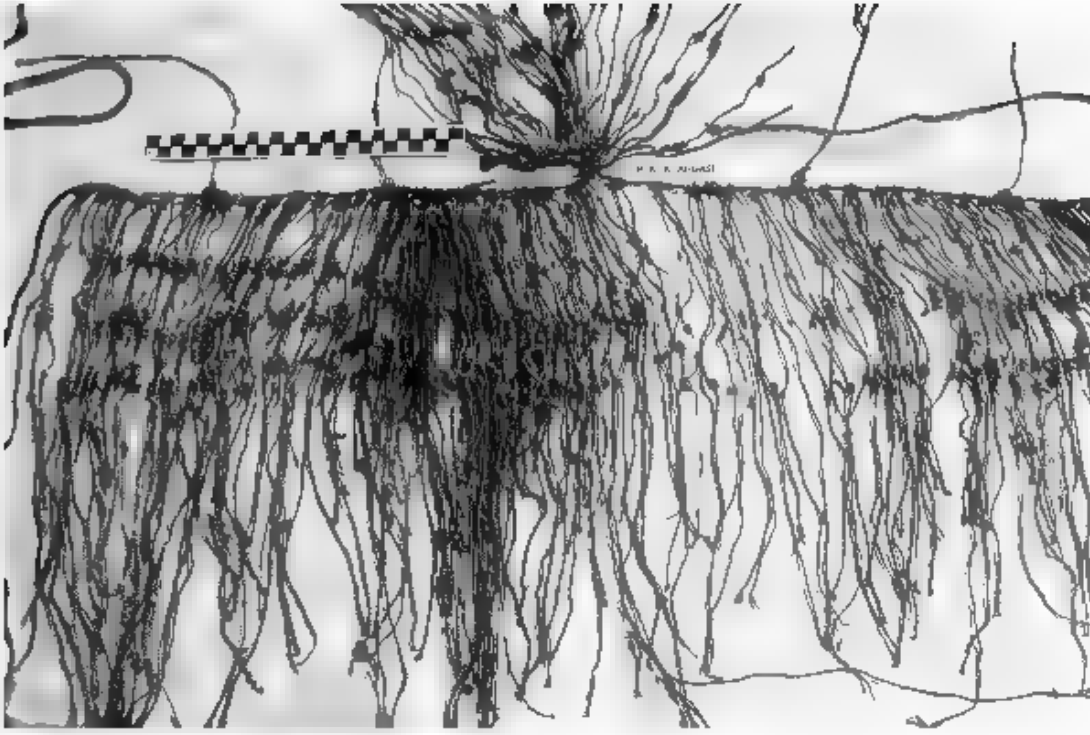


Figure 9.7. linked set, khapus JR255 (*left*) and LR256 (*right*) (note that the labels in photo are incorrect) (author photo, courtesy of Alejandro Chu, research funded by the Gobierno Regional de Lima, 11/2102–12/2014)

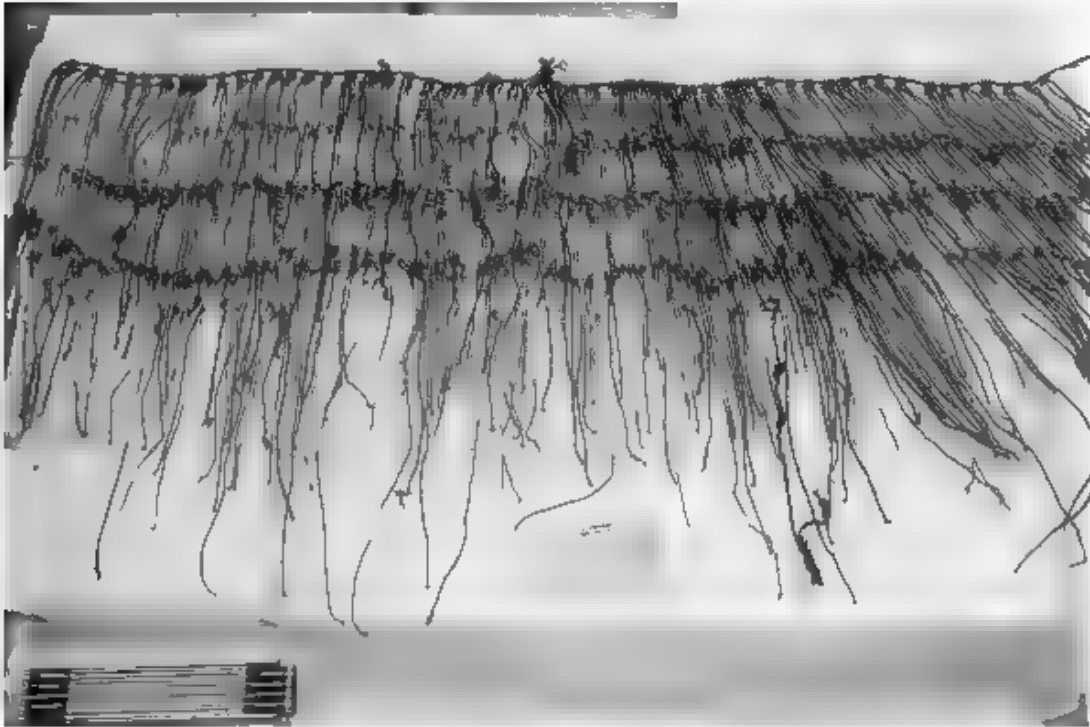


Figure 9.8. Linked set, khapus UR267A (*left*) and UR267B (*right*) (author photo, courtesy of Alejandro Chu, research funded by the Gobierno Regional de Lima, 11/2102–12/2014)

Table 9.4. Closely matching pair UR267A and UR255 and the repeating value 15

UR267A		UR255	
Cord # (v attached)	Value	Value	Cord (r attached)
44	141	141	50
45	15	126	51
46	126	15	52
47	127	127	53
48	15	112	54
49	112	15	55
50	110	110	56
51	15	95	57
52	95	15	58
53	149	148	59
54	15	133	60
55	134	15	61
56	201	201	63*
57	15	186	64
58	186	15	65

*Cord #62, which has no numerical value, is tied around the primary cord

edge of Qolqawasi. Although they were recovered in different areas of the storage facility, the numerical values registered on khipu UR255 (corridor) closely match those recorded on UR267A (sorting space), while the values on UR256 (corridor) closely match (though less so than in the former “match”) those recorded on UR267B (sorting space)

In addition to the regular repetition of their respective fixed numerical values, these khipus contain highly unusual arrangements—what I refer to as “paradigms” of arithmetic relations among sets of (usually three) numerical values. In table 9.4, I give sequential numerical values from cord segments of the closely matching pair UR267A and UR255, which contains the fixed value 15. Table 9.5 displays a run of corresponding cords between the closely matching pair UR267B and UR256, which contains the repeating, fixed value 10. I should note that the latter closely matching pair has closely matching cord values over no more than one-fifth or so of the cords of the two samples. Thus, I apply the designation “closely matching” only very loosely to this second pair. Nonetheless, the matching values shown in table 9.5 do clearly indicate

Table 9.5. Closely matching sections of the pair UR267B/UR256 with repeating value 10

UR267B		UR256	
<i>Cord #</i> (<i>r</i> attached)	<i>Value</i>	<i>Value</i>	<i>Cord #</i> (<i>v</i> attached)
86	394	394	104
87	10	384	105
88	384	10	106
89	329	329	107
90	10	319	108
91	319	10	109
92	—	[3 cords, no value 110–112]	
93	10		
94	—	518	113
95	518	508	114
96	10	10	115
97	508		
98	152 [sic]	153	116
99	10	143	117
100	143	10	118

that the two samples were related to each other in a fundamental manner—at least for the cord sections reproduced in this table.

What can we say about the arithmetic paradigms evident in tables 9.4 and 9.5? In the first place, the two pairings suggest that the two cord keepers who kept these records, while both were apparently aware of the same quantities of goods being accounted for, used two different, but reciprocal, principles of numerical organization in representing these values—“reciprocal” in that one encounters the same values whether reading the equations left to right or right to left. That is, the values recorded on UR267A, of the linked set UR267A and UR267B, follow a pattern—an arithmetic paradigm—that I would characterize as *X / fixed # / Y*; for example: 127 / 15 / 112. However, those recorded on its match in the other linked set—UR255—follow the pattern *X / Y / fixed #*; for example: 127, 112 / 15. On the other hand, khipu UR267B of the linked pair UR267A and UR267B follows the pattern *X / fixed # / Y*, for example: 394 / 10 / 384; its match, khipu UR256 of the linked pair UR255 and UR256, follows the pattern *X / Y / fixed #*; for example: 394 / 384 / 10. These two patterns are shown in table 9.6.

Table 9.6. The two numerical patterns/paradigms in the two matching sets

<i>UR267A and B Pattern</i>	<i>UR255 and 256 Pattern</i>
X / fixed # / Y	X / Y / fixed #
127 / 15 or 10 / 112	127 / 112 / 15 or 10

What is the significance of the two number patterns? They may be two different, reciprocal ways of performing complementary arithmetical procedures, for example: $127 - 15 = 112$, and/or $127 - 112 = 15$. Perhaps these are simply two strategies for ensuring the performance of good arithmetic operations (if so, this should have alerted the *kipukamayuyq* to the error made on *kipu* UR267B, cords #98–#100, which gives the erroneous calculation: “ $152 - 10 = 143$ ”, this error is corrected on *kipu* UR256 cords #116–#118, where we find 153 [not 152] $- 143 = 10$).

Conclusions

In chapter 1, I stressed the importance of taking note of issues in Western accounting when approaching Inka accounting practices. This points us in particular to the preoccupation of traditional accounting history with the evolution of accounting practices in Western Europe, on the one hand, and the emphasis in the New Accounting literature on issues of power, surveillance and control, on the other. I believe there is evidence of the latter at Inkawasi, this is especially apparent in our discussion of the array of checks and balances accounting procedures in use at the site. Do these Andean materials provide evidence that can be interpreted as historical in nature, not only of the history of Andean accounting but also of the history of the empire? I would argue that much of what has been described here in terms of accounting methods and practices at Inkawasi constitutes a sort of baseline for the writing of an Inka history.

My claim that history is embedded in the accounting methods at Inkawasi relates to the evolution of accounting practices at the site during the time when the Inkas were advancing on the Huarco peoples, probably in the late fifteenth and early sixteenth centuries. The historical observations we can draw from these accounting data include such items as: (a) a high-level, state-sanctioned accounting regime was in operation at Inkawasi in the decades before the Spanish conquest; (b) accountants at Inkawasi followed a practice of tying *kipus* to each

other, perhaps to aggregate into the same large account the enumeration of different products, (c) accountants commonly practiced checks-and-balances techniques, including making copies of full *kipu* records, as well as structuring the internal numerical records in such a way that addition and subtraction could be performed inside accounts to check totals; (d) someone separated sets of *kipus*, placed them on the ground and covered them with agricultural produce, perhaps to mark certain *kipus* as relevant to certain products stored at the site, and (e) people at the site made grid-like markings on the floors of the “sorting” spaces, probably to establish a template of standardized amounts for storehouse record keeping.

Such historical facts are, admittedly, a slim ledge on which to stand and build an indigenous Andean/Inka history. Nonetheless, I think that such observations represent a foothold (or perhaps better a toe-hold¹), one that barely existed before the discovery and the scientific excavation of Inkawasi’s *kipu* archive. These observations, while not as deeply informative as traditional, Western linear forms of history writing (e.g., concerning such matters as great battles, the abdication of a crown by a reigning king, etc.), nonetheless constitute historical moments, events, and actions. They are, as I suggested in the introduction, the stuff of mid twentieth century *Annales* history, with its attention to the study of statistics, censuses, demographic trends, and (often) long-term social and economic processes. I will explain and explore this proposition, aimed at constructing an *Annales* type history of the Inka Empire, in the conclusions.

Appendix: Inkawasi *Kipu* Inventory

Project No.	KDB No.	Findspot	No. of Cords	Comments/Observations
#9288-2013	LR255	sector C, subsector 5, unidad 19K, U.E. 02	85	Tied to UR256; included in large “ <i>kipu</i> pile” found in corridor; values closely match those of JR267A.
#9238-2013	LR256	sector C, subsector 5, unidad 19K, L.E. 2	118	Tied to UR255; included in large “ <i>kipu</i> pile” found in corridor; values occasionally match those of JR267B. Repetition of fixed value 10.

Project No.	KDB No.	Findspot	No. of Cords	Comments/Observations
#9238-2013	LR257	sector C, subsector 5, unidad 19K, L.E. 02	10	Included in large “kipu pie” found in corridor; very large numbers (in tens of thousands).
#9238-2013	LR258	sector C, subsector 5, unidad 19K, L.E. 02	41	Included in large “kipu pie” found in corridor.
#9238-2013	UR259	sector C, subsector 5, unidad 19K, L.E. 02	13	Included in large “kipu pie” found in corridor. All values 4 or below. Tied to LR260
#9238-2013	UR260	sector C, subsector 5, unidad 19K, L.E. 02	24	Included in large “kipu pie” found in corridor. Primary cord tied around primary cord of LR259
#9238-2013	UR261	sector C, subsector 5, unidad 19K, L.E. 02	12	Included in large “kipu pie” found in corridor
#12009-2013	LR262	sector A, subsector –, L.A. 02, unidad 20M/ cuad. 07, L.E. 01	138	Excavated from floor adjacent to center of east wall of kallanka J.A. 02
#12704-2014	LR263	sector A, subsector 1, L.A. 02, unidad 2K, U.E. 08	236	Excavated from floor of kallanka J.A. 02, against south wall. Small values on cords (13 or lower).
#12703-2014	LR264	sector A, U.A. 02, unidad 21K, U.E. 05	226	Excavated from floor of kallanka J.A. 02, against south wall. Tied with common pendant cord to UR265
#12703-2014	LR265	sector A, U.A. 02, unidad 21K, U.E. 05	14	Excavated from floor of kallanka L.A. 02, against south wall. Tied with common pendant cord to UR264. All values 7 or lower
#13829	LR266	sector A, subsector 1, L.A. 04, unidad 20N, U.E. 12	129	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. Four-corner braided primary cord; at beginning is needlework bundle with red fringe. Repetition of fixed value 47. Matches LR275

Project No.	KDB No.	Findspot	No. of Cords	Comments/Observations
#13092	LR267A	sector A, subsector 1, L.A. 07, unidad 24f, U.E. 16	79	Tied to UR267B, found in basket covered with a i (chili peppers) in "sorting/drying space" U.A. 07. "Close match" with UR255. Repetition of fixed value 15
#13092	LR267B	sector A, subsector 1, L.A. 7, unidad 24f, U.E. 16	103	Tied to LR267A, found in basket covered with a i (chili peppers) in "sorting/drying space" U.A. 07. Occasional matching values with UR256. Repetition of fixed value 10
#13835	LR268	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 18	128	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka L.A. 04. Repetition of fixed value 208
#13828	LR269	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 11	273	Found in group of fourteen khipus covered with peanuts in one of the kallankas adjacent to corridor.
#13830	LR270	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 13	158	Found in group of fourteen khipus covered with peanuts in one of the kallankas adjacent to corridor.
#13842	LR271	sector A, subsector 1, L.A. 04, unidad 19Q, L.E. 25	32	Found covered with frijoles (black beans, <i>Phaseolus vulgaris</i>) near center of kallanka L.A. 04, same room as the fourteen khipus covered by peanuts. Cords #1-#10 = repeating full decimal values, mostly in hundreds, cords #11-#32 = small values (7 or lower).
#13839	LR272	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 22	173	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka L.A. 04. Values mostly 20 and lower.
#13831	LR273A	sector A, subsector 1, L.A. 04, unidad 20N, U.E. 14	78	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka L.A. 04. All three digit numbers (hundreds) and banks.
#13831	LR273B	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 14	109	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka L.A. 04. Mostly four digit number (thousands) and banks. Numbers similar to thousands numbers on matching pair JR266 and JR275

Project No.	KDB No.	Findspot	No. of Cords	Comments/Observations
#13832	LR274A	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 15	88	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. Repetition of fixed value 30
#13832	LR274B	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 15	95	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. Repetition of fixed value 17
#13836	LR275	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 19	112	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. Repetition of fixed value 47. Matches LR266.
#13837	LR276	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 20	5	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04
#13834	LR277	sector A, subsector 1, L.A. 04, unidad 20N, U.E. 17	150	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. From beginning to middle, many values in 20s and 30s.
#13833	UR278	sector A, subsector 1, L.A. 04, unidad 20N, U.E. 16	297	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04. Organized in sets of nine cords. Values primarily in low three digits (100s–500s)
#13838	LR279	sector A, subsector 1, L.A. 04, unidad 20N, J.E. 21	12	Found in group of fourteen khipus covered with peanuts in southwestern corner of kallanka U.A. 04.
#16474	LR280	sector A, subsector 1, L.A. 02, U.E. 10	37	Last khipu excavated. Was in same kallanka as UR263, but against opposite wall. Very dense subsidiaries—up to 4–5 levels deep. Numbers mostly two or three digits

Counting Heads in Tawantinsuyu

The recording of census and tribute data is among the best-attested functions of *kipus* in the Spanish chronicles. Cieza de León provides the following account of what he learned in his investigations about the registry of census and tribute data:

The nobles in Cuzco told me that in olden times, in the time of the Inka kings, it was ordained of all the towns and provinces of Peru that the head men [*señores principales*] and their delegates should [record] every year the men and women who had died and those who had been born, they agreed to make this count for the payment of tribute, as well as in order to know the quantity of people available to go to war and the number that could remain for the defense of the town; they could know this easily because each province, at the end of the year, was ordered to put down in their *quipos* [*kipus*], in the count of its knots, all the people who had died that year in the province, and all those that had been born. And at the beginning of the year they went to Cuzco with their *quipos* in order to make it known who had been born and who had died in that year.¹

Some forty years after Cieza published his chronicle, Martín de Murúa described aspects of Inka census taking that vary in some respects from what Cieza understood about this process. His narrative contains some interesting details concerning the actual procedures involved in local population counts.

They sent every five years *quipucamayos* [*kipu*-keepers], who are accountants and overseers, whom they call *tucuyricuc*. These came to the provinces as governors and visitors, each one to the province

for which he was responsible and, upon arriving at the town he had all the people brought together, from the decrepit old people to the newborn nursing babies, in a field outside town, or within the town, if there was a plaza large enough to accommodate all of them; the *tucuyricuc* organized them into ten rows ["streets"] for the men and another ten for the women. They were seated by ages, and in this way they proceeded [with the count] as has been said in preceding chapters. And this was commanded by the *Inga* [Inka] every five years.²

Murúa goes on to identify the ten age-grades by name and to explain how the population count was used in determining the distribution of people to work tasks—tribute labor—for the state. Additional accounts of the production of local censuses, the assessment of tribute labor based on these counts, and the critical role played by the *kipus* in these processes appear in the chronicles of José de Acosta,³ Garcilaso de la Vega,⁴ and Bernabé Cobo,⁵ among others.

Given the explicit and copious testimony provided by the Spanish chroniclers of the central role played by *kipus* in the recording of census and tribute data in the Inka state, we might suppose that research on these accounting devices would attend closely to these well-documented functions. In fact, however, until recently there has been virtually complete silence with respect to the census-recording functions of the *kipu*.⁶ This silence is all the more curious when we note that *kipu* census recording did not, in fact, end with the conquest; rather, local *kipu*-keepers continued to maintain their knotted-string census records for several decades after the Spanish conquest, primarily as a check on potential Spanish abuses in calculating and collecting tribute.⁷ In fact, Salomon has recently shown that community record keeping combining *kipus* and written (alphabetic) accounts persisted in the central Andean community of Tupicocha until only a few decades ago.⁸ Similarly, as discussed in chapter 1, Hyland et al. (2014) have analyzed eighteenth-century *kipu* boards preserved to the present day in a couple of central Peruvian highland communities that juxtapose *padrones* (lists of the names of tribute paying heads of households written in alphabetic script) with *kipu* cords. Thus, the Inka preoccupation with census taking has survived to the present day.

In this chapter, I will address the lacuna in *kipu* studies with respect to the use of these devices in recording census data in late pre-Hispanic and early colonial times. In practice, the use of *kipus* to record population figures was inseparable from their use in assessing tribute.⁹ In this

chapter, however, I will limit discussion to the census-recording function of *quipu* census records and will address the issue of colonial era census and tribute records in chapter 12.

Colonial Censuses and *Quipu* Accounts:

Can We Identify Correlations between Them?

Can we identify census *quipus* in the extant corpus? And, what might a census *quipu* actually look like? Perhaps the first place to look is data recorded when census records were being kept both in *quipus* and in Spanish written accounts. The postconquest, early colonial era is crucial to this search because without Spanish documents testifying to the contents of *quipus*,¹⁰ there is no basis for determining what the likely contents of any *quipu* might be. Therefore, in my view, the best strategy for identifying likely census *quipus* is to study what early colonial census accounts produced by the Spaniards looked like, in terms of their magnitudes, naming and organization of categories, etc., and, by analogy, to then search for *quipus* that have similar numerical magnitudes and distributions of cord groupings by space and/or color—the latter possibly representing category markers.

I will look at data recorded in colonial census documents beginning with the time of the Spanish conquest, in 1532, and continuing until around 1585, a significant date because that year, following the Third Council of Lima (1584–1585), *quipus* were declared to be idolatrous objects, and ordered to be destroyed.¹¹ While *quipus* did not disappear altogether,¹² *quipu* use became more clandestine, and the knotted records no longer received the official validation and sanction accorded to them earlier, when data read from these accounts by native record keepers were readily accepted in court testimony.¹³ I will compare the colonial census data to the information recorded on Inka *quipus*, as displayed in relevant *quipu* data tables stored in the database of the *Quipu Database* project.

Having identified a roughly fifty-year (1532–1583) time frame within which to search for possible correlations between *quipus* and written census accounts, I must note the striking disjunction between the regions where possible census *quipus* have been recorded archaeologically, and the areas where the majority of the colonial census data were recorded. Due to the excellent conditions for the preservation of organic remains in the dry coastal deserts of Peru and northern Chile, the majority of *quipus* come from plundered coastal graves, very few are

from the highlands (the principal exception is Chachapoyas, in northern Peru, see below), where rainfall is often abundant, and temperature variations are more extreme.

The Spaniards viewed the coast as the most suitable region for settlement, and thus, its native populations were decimated by introduced diseases or displaced very early in the colonial period. In contrast, while communities in the highlands were as ravaged by diseases as those on the coast,¹⁴ the displacement of native Andeans by Spaniards was nowhere near as immediate nor as extensive in the highlands as on the coast. By the time the Spaniards set out to count and reorganize the native peoples of the Andes—from the late 1540s through the mid-1570s—there were fewer native communities remaining along the coast (where the majority of *kipus* were found in the nineteenth and twentieth centuries) than in the highlands, however, most of the colonial census-taking activity went on in the highlands, the region where few *kipus* survived.

In sum, when we attempt to identify correlations between *kipu* census accounts and Spanish written census records, we are generally (though not entirely, because of Chachapoyas) comparing *kipus* from the coast with written census accounts from the highlands. This disjunction requires a critical attitude and a healthy skepticism with regard to any analogies, much less actual correlations, suggested by the material.

What do we mean by identifying a possible “correlation” between a (potential) *kipu* census record and a Spanish written census document? By current definition, a census is “an official enumeration of the people of a nation, state, district, or city, together with the collecting of statistics concerning their property, nativity, age, sex, occupation, etc.”¹⁵ By the logic of the mandate to “enumerate the people,” the actual counting aspect of a census could be represented by a series of tally marks, each mark indicating an individual.¹⁶ In practice, however, most censuses proceed by grouping people into more or less inclusive social units and enumerating the members. This may include groupings such as family, household, age-grade, or some other aggregate entity. Such practices call for the development of either an elaborate system of organizing tally marks into subsets and sets or the use of abstract numerals to denote the magnitude of elements within the groups.¹⁷ The Inka created and innovated on a knotted-string version of the latter, developing in the process a sophisticated decimal place system of numeration using (primarily) three different types of knots.¹⁸

As for the actual counting of people, censuses carried out in the early colonial Andean world took two quite different forms, depending on the circumstances of the encounter between the census taker and the people to be counted.¹⁹ In some cases, people were summoned to a central place such as a village plaza, and the census taker counted them, usually in their (self identified) family groupings. This is similar to the procedure described by Murúa at the beginning of this chapter. We will see another example of this form of accounting procedure below, in relation to the production of a *padrón* (register) of the Tabalosos and neighboring Indians in seventeenth-century Chachapoyas. The other way of organizing census counts in the colonial period followed the model of the *visita* (visitation). In this process, the colonial official, the *visitador*/enumerator, would move from house to house, usually accompanied by local officials, not only counting the number of inhabitants within each household but also identifying each individual by his/her age and status within the household –e.g., tributary, man/husband, woman/wife, child, widowed mother of the husband or wife, etc.

These two types of census-taking procedures may produce significantly different ranges and frequencies of numbers in the final census accounting. In the house-by-house type of survey, for instance, we might have a total household count of, say, seven. Within such a count, in addition to a married couple and children, there might well be a few dependent, nonrelated individuals (e.g., servants, or, in Andean parlance, *yanakuna*). In a census taken of the same group of seven people amassed in a central place, however, dependent individuals, such as widows and *yanakuna*, in addition to unmarried adult children (who might reside in their parents' household), might well be tabulated as single, autonomous individuals. Thus, in the latter type of counting, there would tend to be more single individuals (ones) in the final census registry, whereas in the former, house-by-house type of accounting, there might be a higher proportion of larger numbered unit-groupings.

What numerical ranges of household sizes—or what I termed above “unit-groupings” actually appear in censuses recorded in the early colonial Andes? The answer to this question is important because the range and frequency—which together make up what I will refer to as the distribution—of different numbers of people within census accounting units recorded by the Spanish census takers will be drawn on here to construct exemplars for reconstructing pre-Hispanic census-accounting magnitudes and unit-groupings. Such exemplars—by which I mean ideal numerical grouping-size distributions calculated from colonial

census counts—will be used as the target numerical distributions we will search for in the khipu numerical records in order to identify pre-Hispanic and early colonial khipu census accounts.

Obviously, such colonial census-derived exemplars can only be approximate, and most likely will be on the low side of reasonable population estimates, reflecting the demographic collapse that occurred throughout the New World following—or, in some cases, even before—contact with Europeans (see chapter 11)²⁰ Nonetheless, we must start somewhere in our attempts not only to construct population estimates but also to propose approximations of how communities were composed and organized in terms of the representation of such categories of people as tributaries, parents, children, dependents, etc. The exemplars constructed from colonial censuses may serve to indicate the expected range and frequency, or the distribution, of numbers/unit-groupings that we might look for in trying to identify census khipus from pre-Hispanic and early colonial times.

I should note that I use the term “range” to mean the minimum and maximum numerical values registered in a group of numbers; by the term “frequency,” I mean the number of occurrences of any given integer compared to the total number of integers registered, and by “distribution” I mean the pattern assumed by the range and frequency of integers recorded in a census.

In sum, the colonial censuses are the most relevant and reliable sources available for constructing exemplars for khipu census study. It is important to bear in mind, however, that, since the khipus are as yet undeciphered, while we might find “household sized” numbers recorded on khipus (e.g., 2s, 3s, 4s, etc., and up to 8s or 10s, for polygamous or extended family households), we are as yet unable to read the identity labels on any of them, and so we cannot know if the registration of a 6, for instance, on a given pendant string refers to six people, or llamas, or days, or . . . whatever. If we find, however, that colonial census numbers tend toward certain patterns in terms of their range and frequency or distribution, then we might argue that some particular numerical sequence (i.e., not any particular, individual number) is, at a minimum, “census-like.” This is perhaps the best we can hope for at this stage of our research on the khipus, and this is the type of investigation I pursue in this chapter.

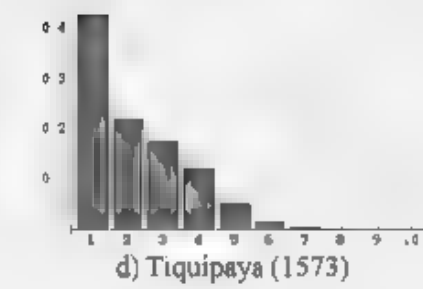
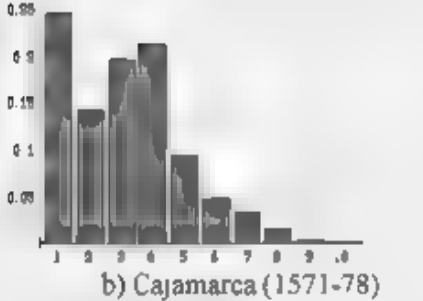
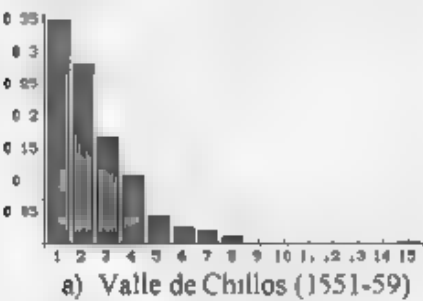
I turn now to an overview of census data drawn from several early colonial population counts. The data in the graphs presented in figure 10.1 were pulled together from various censuses primarily derived from house to house surveys reported in a series of *visitas*, or census-taking events, ranging in date from 1551 to 1653. The *visita* graphs from several ecological/geographical regions: highlands, tropical forest, and coast. This division acknowledges the potential problems alluded to earlier relating to differences in demographic circumstances and in the performance of census taking in different regions of the central Andes. We will revisit some of these issues after providing an overview of the sources of the *visitas* reported on in figure 10.1.

From the highlands, we have data from the following sources: Valle de los Chillos, encompassing communities east of Quito, Ecuador (fig. 10.1a); Cajamarca, in the northern Peruvian highlands (fig. 10.1b); Huánuco, in the central Peruvian highlands (fig. 10.1c); and Tiquipaya, near Cochabamba, in the central Bolivian highlands (fig. 10.1d). From the tropical forest, we have data for two settlements: Moyobamba, in the region of Chachapoyas, northern Peru (fig. 10.1e); and Sonqo, in the *yungas* (lowlands) of eastern Bolivia (fig. 10.1f). For the coast, *visitas* provide information for Cherrepe, in the Saña valley, on the northern coast of Peru (fig. 10.1g); and Acarí, on the southern coast of Peru (fig. 10.1h). Each of the census graphs synthesizes information from three to five house-to-house inquests performed during the *visita* in question. The exception to this is the *padrón* of the Tabalosos (fig. 10.1e), which was drawn up on a single census-taking occasion during an *entrada* (entry) into the cloud forest along the Río Mayo, near Moyobamba, when the members of several tribes (for example, the Tabalosos, Suchiches, and Guahenes) were summoned and quizzed on name, age, household affiliation, and other such census-related matters (see below).²¹

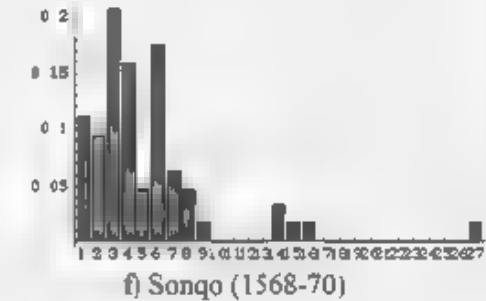
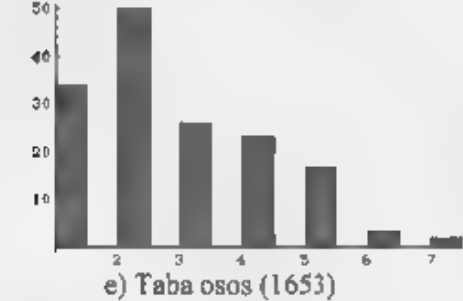
The census graphs in Figure 10.1 show, on the horizontal axis, the numbers of people counted in each household (this is the measurement of unit-groupings referred to above), and, on the vertical axis, the percentage of the total number of unit-groupings in the respective censuses with that particular value (i.e., the number of households with that value divided by the total number of households).

I should explain why I've chosen this group of *visitas* and in particular the extent to which this selection is drawn from material recorded in the 1570s or later. Presumably the most valuable information for re-

HIGHLANDS:



TROPICAL FOREST:



COAST:

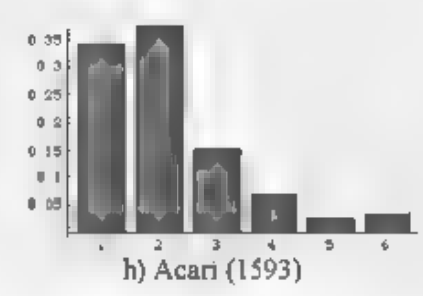
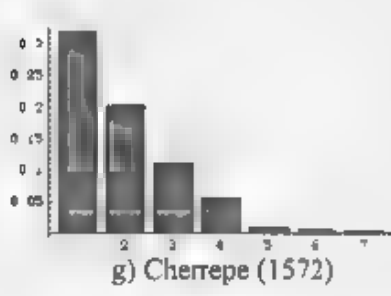


Figure 10.1. Population graphs from colonial census counts (images by Carrie J. Brezine; used by permission)

constructing the form of Inka census *kipus* would be the earliest censuses recorded by the Spaniards. This strategy would point us especially toward the census-taking activities initiated in 1549 by the president of Peru, Vaca de Castro.²² Aside from the fact that only a few of these documents have been recovered, only a small percentage were drawn up to account for the population in a given place by means of discrete accounting units—e.g., individual households, age sets, etc.—as the Spanish chronicles suggest such accounts were organized in the Inka state (see above). Instead, most of the census counts from the 1540s–1550s give aggregate values, that is, they contain total population counts of the towns (*pueblos*) controlled by Spanish *encomenderos* (i.e., Spaniards who were given responsibility to oversee, proselytize, and collect tribute from, a group of natives) or the totals counted in the *ayllus* that made up the communities being counted in the census.²³

We have searched the data recorded in the KDB for matches to the sequences of numbers recorded in a few of these early aggregate-type census records, but we have found none as yet. To find such a “match,” would, in fact, mean finding a *kipu* that was the actual record from a census taken in a particular community in either pre-Hispanic or early colonial Peru—which would be a spectacular discovery, indeed. (But see chapter 11, in which I argue that we may in fact have encountered such a correlation.) It is less likely that an extant *kipu* will match a particular census recorded by the Spaniards, but rather more to be expected that a number of *kipus* will contain sequences of numbers similar in magnitude and distribution of unit-groupings to those recorded in colonial censuses organized to reflect residential, kinship, and other types of population subdivisions. This was the form taken by the census-gathering procedures introduced in the 1570s, marking the massive program of *visitas* and creation of *reducciones* (new towns) initiated by the fourth viceroy of Peru, Francisco de Toledo.²⁴ As discussed earlier, these census taking activities generally involved the *visitador* and local officials going from house to house counting the residents and recording information on names, ages, family, and kinship statuses.²⁵

What do the data in the census graphs in figure 10.1a–h say about the nature of numerical information and the organization of household groupings in colonial censuses from different regions of the central Andes? First, with the exception of the one household consisting of fifteen people in the Vale de los Chillos (fig. 10.1a) and that of twenty-seven people in Sonqo (fig. 10.1f), the range of numbers of individuals making up reporting units in the *visitas* is generally between one and

seven; the majority of unit groupings fall at the lower end of this scale, between one and four. Second, if we consult the documents on which these graphs are based, we find that the largest households within this numerical range (i.e., those containing around five or more persons) were those with a tribute-paying male head of household and his wife (or, in some cases, two wives) their one or two or even more children, and an occasional dependent individual (e.g., a *yana*). Third, those enumerated as single, autonomous individuals tend to be either young men of tribute-paying age (above seventeen years of age), or childless widows or widowers. I suspect that many of these young individuals lived nearby and were related to families in these villages.

Finally, the differences in geographical regions, or ecological zones, are clearly reflected in the data from the *visita* of Huánuco (fig. 10.1c), located in the north-central highlands of present-day Peru. The small number of single individuals found in separate households in this community is markedly different from the others. I believe that this unique feature of the Huánuco data reflects the relatively early date of this *visita* 1562. It took place before the Toledan resettlement campaign, in which people were forced into Spanish-mandated *reducciones*,²⁶ as well as the subsequent high rate of migration of people from these new towns.

The other major difference is that household members on the coast (figs. 10.1g and 10.1h) tend to be fewer in number—between one and six—than those in the other two regions. In the highlands and the tropical forest, households with more than six people are recorded frequently (with the exception of Tiquipaya, in central Bolivia, fig. 10.1d). This may suggest that the relatively smaller households of coastal communities reflect the early depopulation of the coast as Spaniards settled there earlier, and in greater numbers.

Based on the data synthesized in figures 10.1a–h, we should be looking for sequences of numbers in roughly the one to seven range in our attempt to identify *kipu* census accounts. There should be a higher occurrence of numbers in the 1–4 range than in the 5–7 (or higher) range. I do not think we should focus too intently on matching the relatively high proportion of ones (1s) seen in the colonial census graphs, at least not in our search for pre-Hispanic census *kipus*, as the presence of high numbers of single individuals may represent a consequence of demographic collapse following population disturbances and transformations spurred by the Toledan resettlement campaign of the 1570s. Any potential census *kipu* approximating the relatively low number of single individual household values recorded in the 1562 Huánuco *visita*

is likely to be more representative of pre Hispanic (or very early colonial) census *kipus*.

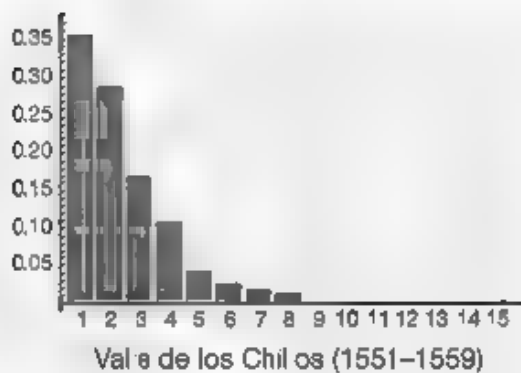
Are there any *kipus* in the known corpus that satisfy the criteria noted above? From a survey of the *kipus* recorded by the KDB project and by the Aschers (1978),²⁷ I estimate there are a minimum of some fifty or sixty census accounts in the extant *kipu* inventory. Study of *kipus* by the KDB project or by the Aschers has enabled us to make the comparisons between exemplary *visita* types and specific *kipus* shown in figures 10.1–10.8.

In the *kipu* analogue graph(s) discussed below, each *visita*/census graph in Figures 10.2–10.9, the horizontal axes display the numbers recorded in knots on the *kipu* samples and the vertical axes record the percentage of the total numerical values recorded in the respective *kipus* that are represented by that number.²⁸

In order to evaluate the proposed correlations of the *kipus* in figures 10.2–10.9, we need to look closely at the distributions indicated in the relationship between the numbers in the sequences of unit-groupings (= horizontal axes) and the percentages of the total represented by each unit-grouping within each graph (= vertical axes). Many of the colonial census graphs and their suggested *kipu* analogues are strikingly similar. Carne Brezine, KDB administrator from 2002–2005, ran a series of chi-square, goodness-of-fit tests on the comparisons between *visitas* and *kipu* proposed in figures 10.2–10.9. While many of the tests showed significant differences between the *visita* and the *kipu* (p values less than .05), there were several that did not show evidence of dissimilarity (p-values greater than .05). Those with p values greater than .05 can be considered statistically similar in their numerical distribution to the *visitas* against which they were compared. The similar pairs are listed below, with p-value(s) in parentheses:

- Valle de los Chillos and UR29 (0.27) (fig. 10.2)
- Cajamarca *visita* and UR91 (0.95) and AS26a (0.15) (fig. 10.3)
- Tiquipaya *visita* and UR29 (0.24) (fig. 10.5)
- Moyobamba *padrón* and AS157 (0.14) and UR23 (0.08) (fig. 10.6)
- Acarí *visita* and UR23 (0.11) (fig. 10.9)

Even in several of the comparisons that are not statistically similar, the range and frequency of numbers in the *kipu* analogues appear to approximate generally the numerical parameters of the data reported in the colonial census accounts. Figures 10.2–10.9 show that it could be possible to use colonial census data to construct what I have termed



Possible Khipu Analogue:

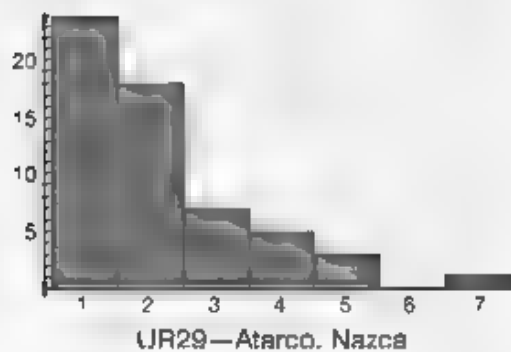
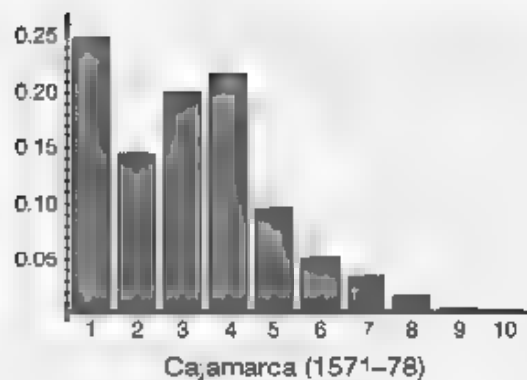


Figure 10.2. Valle de Chillos / khipu comparison (images by Carrie J. Brezine, used by permission)



Possible Khipu Analogue:

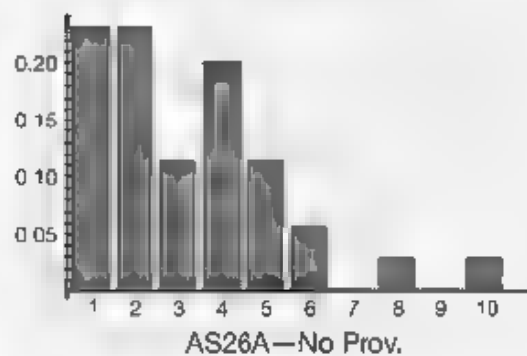
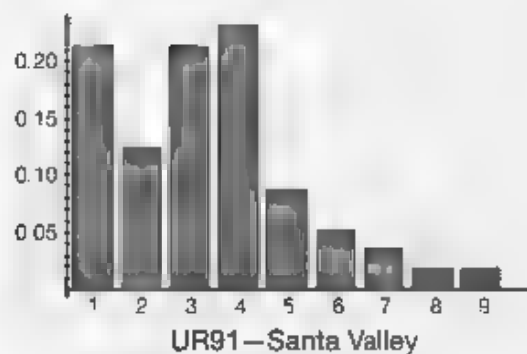


Figure 10.3. Cajamarca / khipu comparison (Images by Carrie J. Brezine; used by permission)

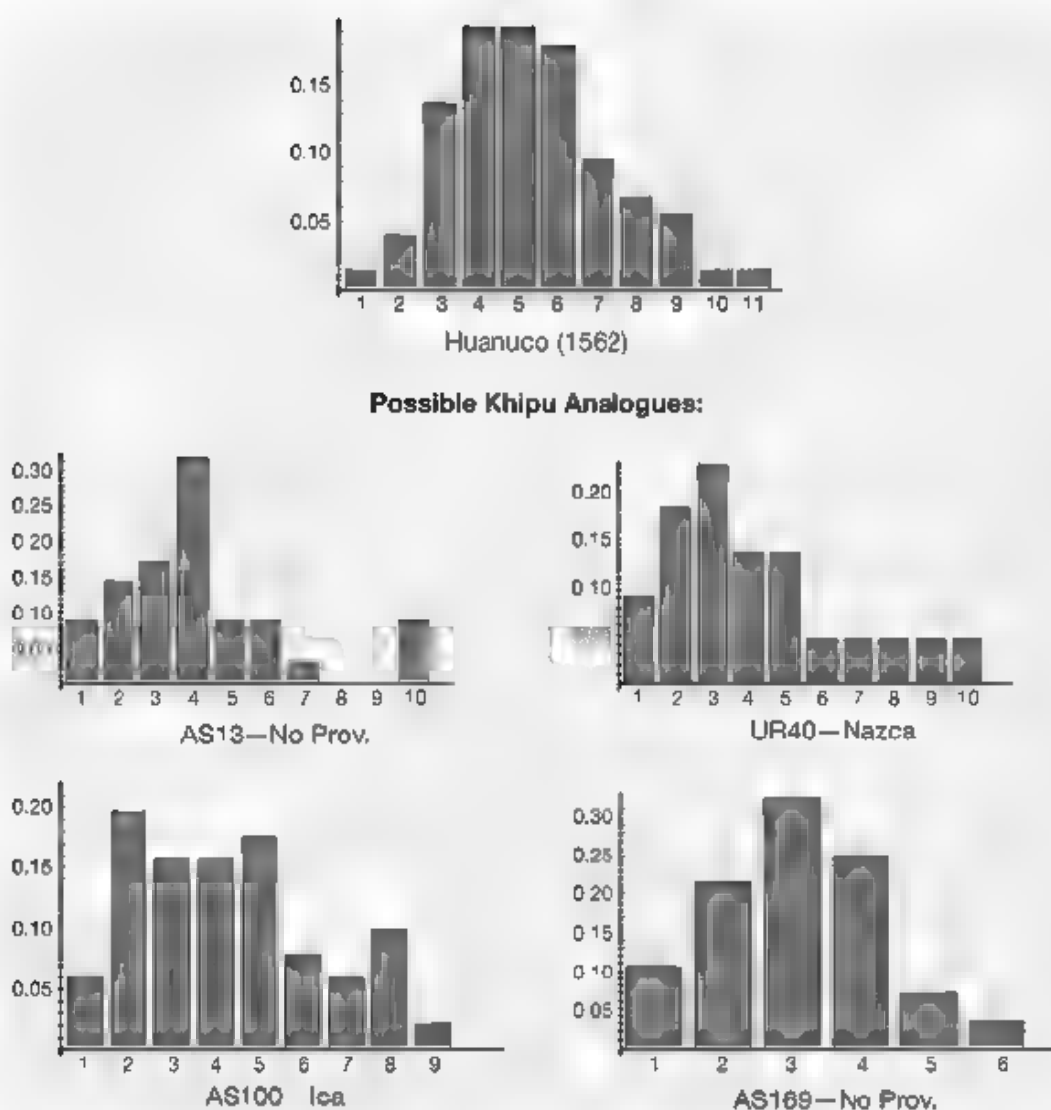


Figure 10.4. Huanuco / khipu comparison (images by Carrie J. Brezine; used by permission)

“exemplars” for searching the KDB and other sources to identify possible census khipus.

I should note, however, one major caveat: a considerable geographical distance often separates the location of the *visita* from the provenience, when known, of its proposed khipu analogue(s). For instance, while the graphs of the Tiquipaya *visita* (fig. 10.5) and that of UR29 are statistically similar, the *visita* was carried out in a community in the central highlands of present-day Bolivia, whereas khipu UR29 is from the site of Atarco, on the southern coast of Peru (see chapter 3). While we cannot imagine that these two documents record data pertaining to the same population (if UR29 was a census khipu), the concurrence between the two data sets prompts us to ask if the similarity of UR29 to a known colonial census gives us grounds to investigate this khipu as a

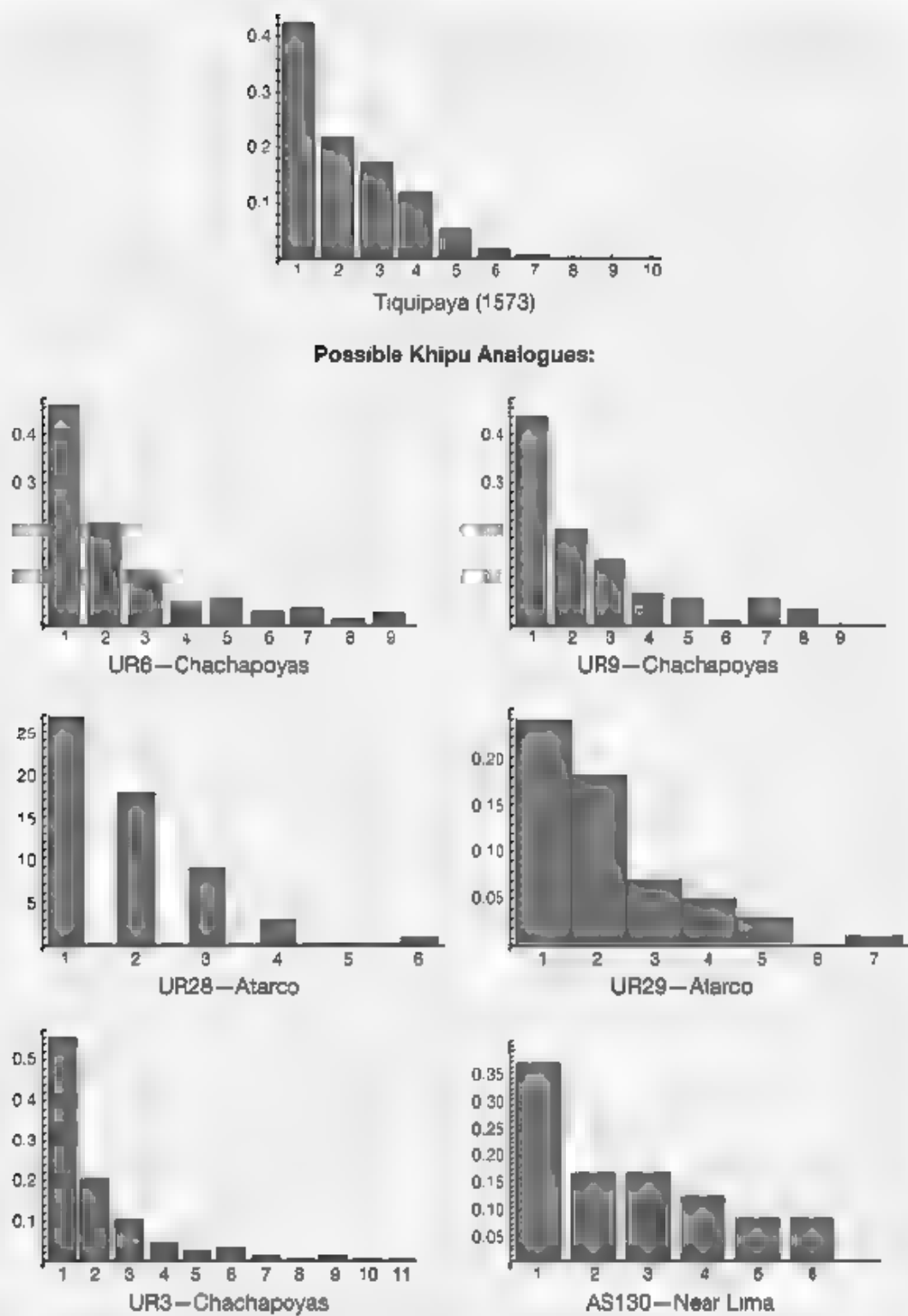
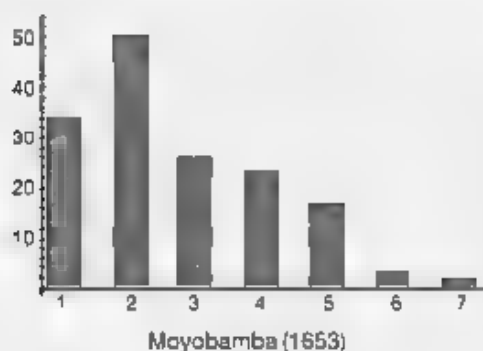


Figure 10.5. Tiquipaya / khipu comparison (Images by Carrie J. Brezine; used by permission)



Possible Khipu Analogues:

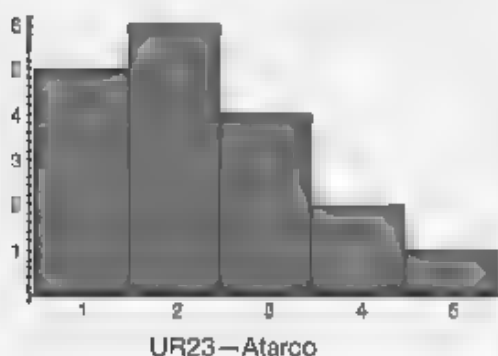
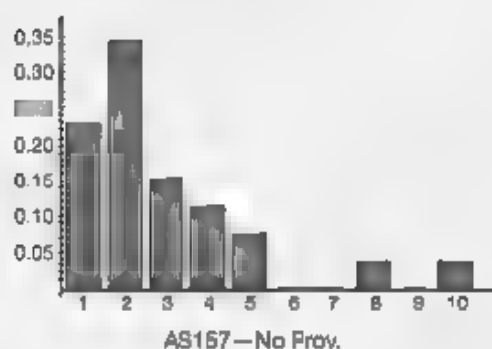
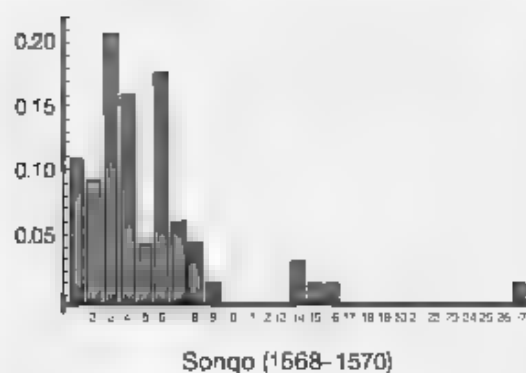


Figure 10.6. Moyobamba / khipu comparison (images by Carrie J. Brezine; used by permission)

potential census record. I contend that it does, and I shall pursue such an investigation in the next section.

On the other hand, we also find *visita* and khipu data that have proveniences that are quite near to each other. This is the case, for instance, in figure 10.9, the graph of the 1593 census from Acarí, on the southern coast of Peru, compared to potential khipu analogue UR23, from the site of Atarco, in the Nazca River valley, a few river valleys north of Acarí. Although these two documents probably do not pertain to the same population, there is the likelihood that populations in Acarí and Atarco were similarly organized—and that this would be reflected in their respective census records



Possible Khipu Analogue:

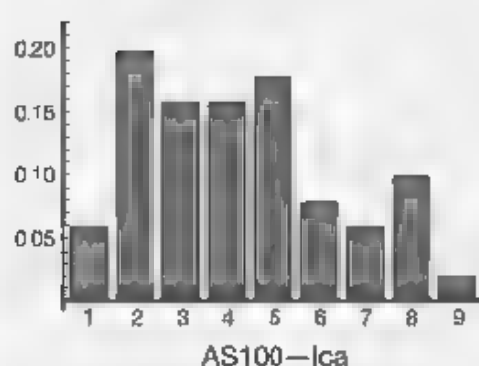
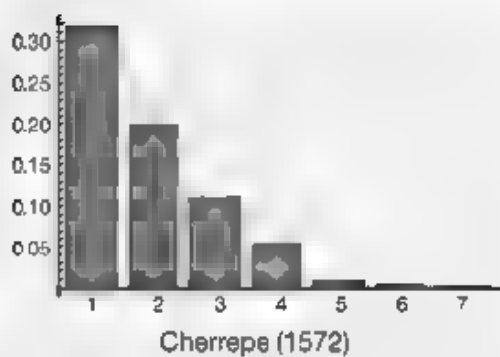


Figure 10.7. Sonqo / khipu comparison (images by Carrie J. Brezine; used by permission)



Possible Khipu Analogue:

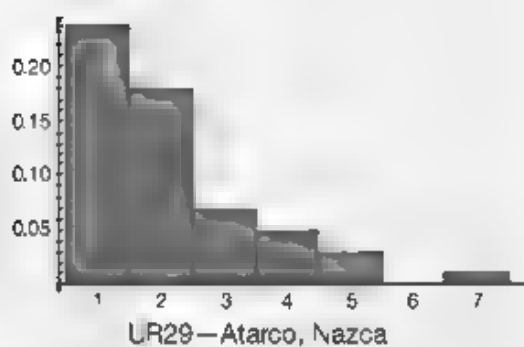
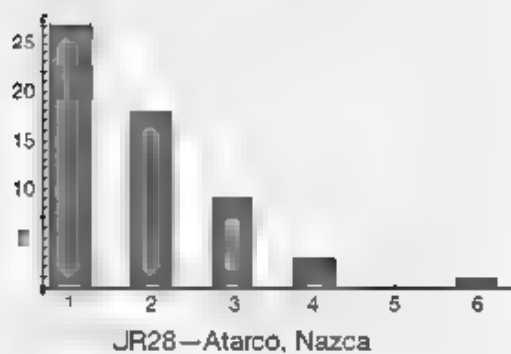
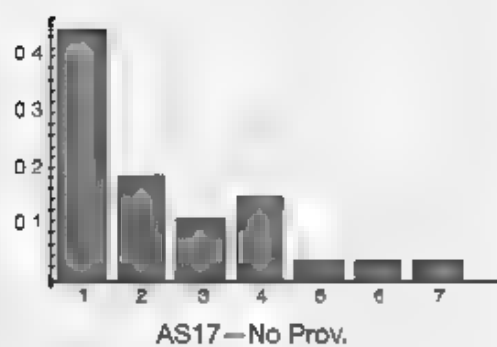
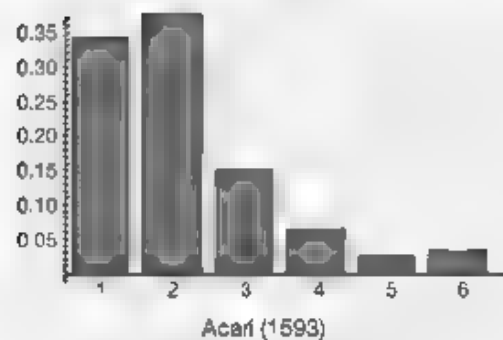


Figure 10.8. Cherrepe / khipu comparison (images by Carrie J. Brezine; used by permission)



Possible Khipu Analogue:

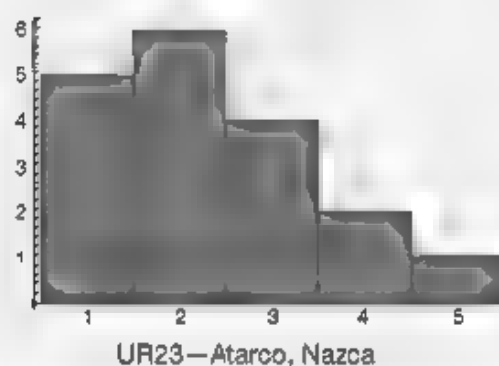


Figure 10.9. Acari / khipu comparison (images by Carrie J. Brezine; used by permission)

Why would it be important to determine that a particular *kipu* contained census data? Identifying a census account, particularly one from pre-Hispanic times, would not only provide actual precontact population figures—the basis for developing a study of pre-Hispanic demography—but also presumably demonstrate that the data is displayed in a format, employing semasiographic sign units and values, reflecting precontact demographic classificatory categories and community organizational structures. Thus, the discovery of census *kipus* could open the way into understanding Inka intellectual and technological traditions, as well as social, political, economic, and administrative constructions and representations.

Colonial Censuses as Models for the Organization of Categories in (Potential) Census *Kipus*

Aside from potential numerical-distributional similarities, what can we learn that might help us in our search for census *kipus* from studying the *visitas* and their comparison to extant *kipus*? I turn now to a comparison between colonial (written) census data and a particular *kipu*—an analogy that is not specifically proposed in figures 10.2–10.9. I will look closely at a portion of the *padrón* (registry) of the Tabalosos and allied Indians, which was drawn up in 1653 near Moyobamba, in Chachapoyas, northern Peru, and compare the data to *kipu* UR29, one of the linked group of samples from Atarco, in the Nazca valley of southern Peru, which was discussed in chapter 3. In this comparison, I consider the *padron* material as being generally exemplary of the presentation of census data in Andean census registries from the time of the Toledan *visitas* (early 1570s) and on into the seventeenth century. Thus, my intention here is to use the 1653 *padrón* for illustrative purposes—that is, to establish certain political, social, and demographic categories, relations, and parameters that may be embedded, or encoded, in a census *kipu*. On the other hand, I am suggesting, as I did earlier (see above), that UR29 from Atarco is a census *kipu*.

The Padrón of the Tabalosos

On October 7, 1653, a contingent of twenty-nine Spanish soldiers under the command of Martín de la Riva Herrera, chief justice of the province of Cajamarca and governor of the town of Chachapoyas, set off on the

first of what would turn out to be four expeditions -*entradas*—into the forested provinces of Lamas and Moyobamba.²⁹ The term *entrada* appears commonly in the colonial literature from the eastern Andes and refers to an expedition undertaken by Spanish soldiers, often accompanied by Catholic priests and other attendants. The goal was to “enter” the forbidding forested regions of the upper Amazon to pacify, “reduce” (i.e., bring the scattered populations into settlements), and proselytize. Riva Herrera headed eastward toward the lands of the Tabalosos, Motilones, Suchiches, Guahenes, and Angahuallos Indians around the modern-day town of Lamas.³⁰

Lamas was not completely unknown to the Spaniards. A mission had been established in this region some forty years earlier, following an *entrada* made in ca. 1603–1604, led by Captain Juan de Vargas Machuca. In addition, for the twelve years leading up to Riva Herrera’s expedition, Padre Lucas de la Cueva had been living among various Indians (esp. the Geberos) in the area. From the information gleaned from de la Cueva and other Spaniards who had visited the region, Riva Herrera knew that there were two principal lords, or *caciques*, of the Tabalosos Indians, the largest of the various groups he intended to pacify.

About a week after setting out from Chachapoyas, Riva Herrera and his men made contact with the two Tabalosos *caciques*, Juan Ojanasta and Majuama. The governor and his lieutenants persuaded Ojanasta and Majuama to assemble their people at a place on the Río Mayo where they would be counted and their names registered in a *padrón*. It appears that the Tabalosos and their allies, the Suchiches and Guahenes, complied with this effort at pacification because, they noted, they had been in a state of constant warfare with other groups in the region, most notably the Amasijines.³¹ Therefore, on October 16, 1653, some 422 members of the Tabalosos, Motilones, Suchiches, and Guahenes tribes gathered along the Río Mayo to be counted and to have their names entered in a registry. They would later be “reduced” into two new towns (*reducciones*) of San Joseph de los Lamas and La Virgen del Rosario de los Tabalosos.

The *Padrón general de los yndios Tabalosos* takes up four folios of the document. The indigenous peoples were named and enumerated within three different ethnic and political groupings, as follows (we can gloss the Spanish term *parcialidad* as “sociopolitical grouping”):

- I. *Parcialidad* of the Tabalosos—those subject to the *cacique* Ojanasta;

- II. *Parcialidad* of the Lamas, in the province of the Tabalosos, who are from the other side of the river—subjects of Majuama,
- III. *Parcialidad* of the Sachiches and Guahenes Indians of the province of the Tabalosos—subjects of Tajojoa.

In order to convey a sense of the types of information recorded in this *padrón*, I translate below a portion of a page from the first folio (fol. 11v) of the document. The numbers given to the right of the entries are included in the document:

Parcialidad of the Tabalosos

- Don Juan Oxanasta cacique and governor with his wife Ana Supuama have a son named Martin and a daughter named Maria, together with two young girls named Zayta and Yscaul. . . . 6

Those subject to this casique

- Pablo Chitacal and his wife named Achasquín have a son named Chaguchia and a daughter named Cusapi. . . . 4
- Tussayacasí and his wife Choha have no children. . . . 2
- Sinipua with two wives named, the first one, Suagamay, and the other one Sumamuy have two daughters named Sabula and Titu and a son named Reyno . . . 6
- Angote, Indian bachelor. . . . 1
- . . . [through a total of 422 names]

The following is a longer extract from this document, with the above in the original Spanish.³²

Parcialidad de los Tabalosos

- Don Juan oxanasta casique y governador con su muger ana supuama tiene un hixo llamado martin y la hixa llamada maria = con mas dos chinas llamadas zayta y yscaul. . . . 6

Sujetos a este casique

- Pablo chitacal y su muger llamada achasquín tiene un hixo nombrado chaguchia y una hixa llamada cusapi. . . . 4
- Tussayacasí y su muger choha no tiene hixos. . . . 2
- Sinipua con dos mugeres llamadas la una suagamay la otra sumamuy tiene dos hixas llamadas sabula y titu y un hixo nombrado reyno. . . . 6

- angote yndio soltero. . . . 1
- Tumbasi yndio soltero. . . . 1

Juan tussaguasi y su muger choxani, tiene un hixo llamado, otopo = y una hixa nombrada juxanase. . . . 4
- Chunchiba y su muger Sachu [!] tiene una hixa llamada pualapi. . . . 3
- Unguaya y su muger susuanama tiene dos hixos el uno sin nombre y el otro llamado çabuya. . . . 4
- Ylusi y su muger Langauya no tiene hixos. . . . 2
- suababa soltero. . . . 1
- Chifandama soltero. . . . 1
- Suamuscasí soltero. . . . 1
- Chinamote *principal* con dos mugeres llamadas la una Ynagui y la otra guaca tiene un hixo llamado tuco y una hixa sin nombre. . . . 5
- Juan angapa y su muger Suyngaua tiene un hixo sin nombre. . . . 3
- Matheo suaconsa y su muger Juana tiene un hixo que se nombra asna. . . . 3
- Juacapa con tres mujgeres llamadas la una asuama y las dos [?] mansollo y esquimpel tiene una hixa llamada Ysopa. . . . 5

What does the *padrón* of the Tabalosos tell us about the organization of colonial census information? Several things are immediately apparent. In general, the household of the *cacique* is always presented first in the registry. The headman himself is identified, then his wife (or wives) is named, and then any children and other dependent individuals are listed. It is not uncommon for a total numerical value for the household composition to be given at the end of the household accounting, as in the Tabalosos *padrón*. The accounting of the headman's household, which is usually (though not always) the largest household in the community, is followed by information on his subordinates. In some cases (as in the Tabalosos *padrón*), the registry states explicitly which people belong to the group of the named headman. Single individuals (e.g., widows, widowers, orphans) are commonly listed at the end of census registries, following the accounting of households containing multiple individuals, though this is not the case of the Tabalosos *padrón*.

How might such demographic information and organizational principles appear in a census khipu? I suggest that they might look something like the khipu sample from the site of Atarco, Nazca valley, shown in figure 10.10. A copy of the tabular recording of information in the KDB "data table" of khipu UR29, from the Museum für Völkerkunde, Munich, is provided in table 10.1. Khipu UR29 contains a total of thirty-five cords, each of which bears at least one subsidiary. The thirty-five cords are divided by spacing into seven groups of five cords per group. All cords on UR29 are S-ply, and all pendant cords on UR29 are attached in the recto manner (that is, from the front). The sum of all values recorded in this sample is 123.

Khipu UR29, from Atarco (Nazca), appears as a possible census khipu analogue in three of the *visita*/khipu comparisons (see figs. 10.2, 10.5, and 10.6), making it a useful candidate to demonstrate how a khipu might have been organized in a "census-like" manner. But what arguments support such a premise? Khipu UR29, in fact, contains several possibly census-like features. First, I suggest that the core meaning, or sociopolitical value, of each of its thirty-five cords was its identification with a tribute-paying adult male. There would thus be placeholders for thirty-five tributaries among what I suggest was a total population in Atarco of 123 individuals (the total on khipu UR29). The seven groups into which the khipu cords are divided could represent the seven kin groups that made up this accounting unit (an *ayllu*) or, each of the seven groups could itself represent an *ayllu*; I favor the former interpretation. Subsidiaries attached to cords might represent dependent individuals (see below).

These interpretations of cords and subsidiaries, however, pose several quandaries. We note, for example, that five of the cords do not carry knots, or numerical values (cords #5, #6, #21, #28, and #35). What could an "empty" cord represent? Furthermore, while several of the cords carry a value of two, which may represent a married couple (i.e., a tribute-paying male and his spouse), several other cords carry higher values, such as three, five, and seven. What do these higher values mean, in demographic/social terms?

The first cord on khipu UR29 contains the highest value on this sample: seven. I suggest that this cord—like the first entry in the *padrón de los Tabalosos*, which describes the six members of the *cacique*'s household—represents the household of the *cacique* of this (hypotheti-



Figure 10.10. Kn pu LR29, from Atarco, Nazca valley (courtesy of Museum Fünf Kontinente, Munich, photograph by Marianne Franke)

Table 10.1. Khipu UR29/1000305

<i>Cord No.</i>	<i>Ply</i>	<i>Atich.</i>	<i>Knots</i>	<i>Length</i>	<i>Color</i>	<i>Value</i>
1	\S	R	7L(8.5/\S)	22.0	AB	7
1s1	\S	U	3L(8.0/\S)	24.0	MB	3
1s2	\S	U	1E(7.5/\Z)	30.0	MB	1
2	\S	R	2L(9.0/\S)	27.0	AB	2
2s1	\S	U	1E(9.5/\Z)	25.0	MB	1
3	\S	R	2L(8.5/\S)	26.0	AB	2
3s1	\S	U	2L(9.5/\S)	25.0	MB	2
4	\S	R	2L(8.5/\S)	26.0	AB	2
4s1	\S	U	1E(9.0/\Z)	25.5	MB	1
5	\S	R		30.0	AB	
5s1	\S	U		28.5	MB	21
6	\S	R	LRNS?L(9.0/U)	25.0	AB	
6s1	\S	U		26.5	MB	
7	\S	R	2L(9.5/\S)	27.0	AB	2
7s1	\S	U	1E(8.0/\Z)	25.0	MB	1
8	\S	R	2L(9.5/\S)	27.0	AB	2
8s1	\S	U		29.0	MB	
9	\S	R	2L(10.0/\S)	27.0	AB	2
9s1	\S	U		28.0	MB	
10	\S	R	3L(10.0/\S)	25.0	AB	3
10s1	\S	U	5L(9.0/\Z)	23.0	MB	5 15
11	\S	R	5L(9.0/\S)	22.0	AB	5
11s1	\S	U		28.0	MB	
12	\S	U	1E(9.5/\Z)	26.5	AB	1
12s1	\S	U		29.0	MB	
13	\S	R	1E(10.0/\Z)	26.0	AB	1
13s1	\S	U	2L(10.0/\S)	25.5	MB	2
14	\S	R	1E(10.0/\Z)	26.0	AB	1
14s1	\S	U	1E(9.0/\Z)	25.0	MB	1
15	\S	R	2L(11.0/\S)	27.0	AB	2
15s1	\S	U	1E(9.5/\Z)	25.0	MB	1 14
16	\S	R	4L(9.0/\S)	22.0	AB	4
16s1	\S	U	1E(8.5/\Z)	24.0	MB	1
17	\S	R	1E(8.5/\Z)	24.5	AB	1
17s1	\S	U	4L(9.5/\S)	24.0	MB	4
18	\S	R	1E(9.0/\Z)	25.0	AB	1
18s1	\S	U	2L(10.0/\S)	25.0	MB	2
19	\S	R	1E(9.0/\Z)	25.0	AB	1
19s1	\S	U		27.0	MB	
20	\S	R	1E(10.0/\Z)	25.0	AB	1
20s1	\S	U		27.5	MB	15
21	\S	U		27.0	AB	
21s1	\S	U	1E(10.0/\Z)	25.5		1
22	\S	R	3L(9.5/\S)	25.0	AB	3
22s1	\S	U	1E(10.0/\Z)	23.5	MB	1
23	\S	R	1E(10.5/\Z)	25.0	AB	1
23s1	\S	U	1E(9.5/\Z)	24.5	MB	1
23s2	\S	U		0.0	AB	

Table 10.1. Continued

<i>Cord No.</i>	<i>Ply</i>	<i>Attch.</i>	<i>Knots</i>	<i>Length</i>	<i>Color</i>	<i>Value</i>	
24	\S	R	1E(11.0/\Z)	26.0	AB	1	
24s1	\S	U	2L(8.5/\S)	25.0	MB	2	
25	\S	R	3L(11.5/\S)	24.0	AB	3	
25s1	\S	U	1E(9.0/\Z)	24.0	MB	1	
25s2	\S	U		0.5	KB MB		14
26	\S	R	1E(10.5/\Z)	26.5	AB	1	
26s1	\S	U	3L(11.5/\S)	28.0	MB	3	
26s1s1	\S	U	1E(10.0/\Z)	19.5	KB MB	1	
27	\S	R	2L(10.5/\S)	26.0	AB	2	
27s1	\S	U	4L(10.0/\S)	24.0	MB	4	
28	\S	R		29.0	AB		
28s1	\S	U	2L(11.0/\S)	26.0	MB	2	
28s2	\S	U		0.0	KB MB		
29	\S	R	1E(10.0/\Z)	26.0	AB	1	
29s1	\S	U	3L(10.5/\S)	25.5	MB	3	
30	\S	R	2L(11.0/\S)	26.0	AB	2	
30s1	\S	U	5L(10.5/\S)	21.0	MB	5	24
31	\S	R	2L(11.5/\S)	28.0	AB	2	
31s1	\S	U	1E(11.0/\Z)	26.0	MB	1	
32	\S	R	2L(11.5/\S)	27.0	AB	2	
32s1	\S	U	4L(11.5/\S)	22.0	MB	4	
33	\S	R	2L(11.5/\S)	25.0	AB	2	
33s1	\S	U		29.0	MB		
34	\S	R	2L(11.0/\S)	28.0	AB	2	
34s1	\S	U	4L(11.5/\S)	23.0	MB	4	
35	\S	R		29.0	AB		
35s1	\S	U	3L(11.5/\S)	25.0	MB	3	20 (123)

cal) Atarco area census group composed of 123 people. The cacique's household comprised seven family members. In addition to this family or kin group, there are two subsidiary cords attached to cord #1, which might indicate two levels of subordinate or dependent individuals attached to this household. Perhaps subsidiary #1s1 of cord #1 represents three in laws living in this household, while subsidiary #1s2 represents one servant, or *yana*.

These interpretations give us a small foothold from which to interpret cases where cords contain a value of either one or zero. That is, a cord value of one could represent a single or widowed tribute-paying male, or a widow who maintained tribute-paying obligations. A cord of zero value accompanied by a subsidiary bearing a numerical value (which is found on cords #21, #28, and #35) could represent a household in which no one had tribute obligations (as was true for adults over fifty years of age). The values knotted into subsidiaries in the latter cases

would sign the number of non-tribute payers in these households. I presume that a cord with no value recorded on it and which bears a subsidiary that also has no value represents an empty tributary placeholder that is, a remembered household that once had tribute obligations but that was at the time of the current census defunct.

Obviously these interpretations are incomplete and highly speculative. Nonetheless, if we can begin to approach *kipus* that display numerical magnitudes and distributions similar to those recorded on *kipu* UR29 and critically juxtapose these with colonial census accounts, such as the Tabalosos *padrón* of 1653, we may begin to develop an inventory of possible category labels, or potential “translations,” for structural (e.g., cord and subsidiary) and symbolic (e.g., number and color) features of census-like *kipus*. This could set us on a potentially productive path of reading census-like *kipu*, which could ultimately lead to the decipherment of this category of accounts from Inka administration.

Conclusions

This chapter has addressed two of the most perplexing problems in the study of pre-Columbian Andean societies: native population estimates just prior to and soon after the European invasion, and the interpretation of the enigmatic Inka knotted-string recording device, the *kipu*. These two research topics fall together naturally as the *kipus* have always been understood to have recorded population counts. In this chapter, we have demonstrated, I believe, that it does indeed appear possible and practical to extract from the corpus of some 923 extant *kipu* a subset of samples that may have been used to record census data from late pre-Hispanic to early colonial times. These data could be invaluable in helping us to construct a more accurate estimate of the size of the indigenous population, as well as to gain a clearer understanding of how that population was classified and organized in Inka and early colonial times.

Although serious scientific studies have been carried out on the *kipu* for about a century, I do not think it either unfair, or an exaggeration, to say that the pursuit of the information locked up within the strings of these devices has only recently begun to cast a faint light onto the prehistory and the internal workings of the Inka state. To use *kipus* to reconstruct the Andean past, the most direct and productive method is to focus on how the numerical data, as well as other structural and symbolic features, of potential census *kipus* are organized.³³ These

features may give us insights not only into the numbers of people in different pre-Hispanic communities, but also into the forms of classification and organization assumed by those populations. The latter could provide important clues leading to the recognition of names, labels, classes, and other forms of identification that were the stock-in-trade of signifiers of the *kipu* keepers who went into communities throughout Tawantinsuyu to perform censuses. The signifiers would constitute semasiographic sign elements in the pre-Hispanic cord accounts, the decipherment of which could give us invaluable insights for the interpretation—or “reading”—of this and other classes of *kipu* accounts.

1884

COLONIA DE CHURUS

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Accounting for Demographic Collapse?

I argued in chapter 10 that access to pre-Hispanic *kipu* census figures could open up the field of pre-contact Andean demography. In this chapter, I turn to a concise description and analysis of one *kipu* from northern Peru, which I suggest may provide just such a perspective. This example gives us a view into a “conjunctural” process in Andean history in the period from late Inka to early colonial times. That is, our example concerns neither structural conditions or circumstances characteristic of the Andean *longue durée* nor short term, singular events. Rather, what we will see here is a middle-range (temporally speaking), conjunctural demographic collapse whose history can be traced from just before the conquest until a quarter century or so after that fateful event. The *kipu* we will examine is from Chachapoyas, in the northern Peruvian Andes.

My interest in the subject of *kipu* census records began to take shape while studying *kipus* from Laguna de los Cóndores, in Chachapoyas (see chapter 4). Chachapoyas was one of the last regions of present-day Peru to fall to the Inkas as they advanced northward, toward Quito, from the mid-fifteenth to the beginning of the sixteenth century.¹ The Inka conquest of this region appears to have occurred only a few decades before the arrival of the Europeans in Cajamarca in 1532 (the first Spanish entry into Chachapoyas was in 1536).²

As discussed in chapter 4, Laguna de los Cóndores came to the attention of the archaeological community following news reports in 1997 of the discovery and plunder of a group of seven burial chambers tucked into a rock outcrop in a cliff face high above Laguna de los Cóndores.³ In addition to some 225 mummy bundles (*fardos*) within the burial chambers, thirty-two well-preserved *kipus* were found among the burial goods (chapter 4).⁴ Numerous items of European manufacture or influ-

ence were also present at Laguna de los Cóndores, including a wooden Latin cross, glazed pottery, and glass beads from the Mediterranean region.⁵ It is important to note that in many cases, beads of European manufacture made their way through the native populations of South America even before the arrival of the Spaniards. The other thing that preceded the conquistadores were the viruses and germs of that other world, “gifts” from the Old World that literally devastated native populations, killing off upwards of 90 percent of the indigenous population in many regions of the New World. This demographic collapse will be relevant to our discussion in this chapter

A Chachapoya Khipu—UR11

In this chapter I focus on a particular khipu from Laguna de los Cóndores, which, I suggest, may represent a long-term census accounting among the populace of the territory of Chachapoyas. The object in question is one of a group of six khipus found tied together in a “linked bundle” at the time of the recovery of the grave goods from the badly disturbed and plundered site of Laguna de los Cóndores. The linked bundle forms what I refer to as the “257-series” khipus,⁶ one of two groups of linked khipus found at the site. I will refer to the khipu in question as UR11.

It is with some trepidation that I propose the interpretation of khipu UR11 that follows. The reason for my hesitancy is that my proposed explanation implies that this khipu may have been used to record aggregate, postconquest population data for the Chachapoyas area over a relatively long period of time—for at least half a century, if not a bit longer. Most students of Andean prehistory could probably accept that Inka accountants made sophisticated population counts using khipus over successive census accounting periods, which occurred at five-year intervals, according to the Inka schedule of head counts (see chapter 10), however, many people would balk at the suggestion that these records were maintained at local levels over significantly longer periods of time, making them, in effect, similar to the annals of contemporary Western Europe, or of Mesoamerica. This, however, is precisely how several of the Spanish chroniclers characterized the khipus,⁷ and I will suggest that a segment of khipu UR11 may be just such a long-term census record.

UR11 is one of two khipus that were untied from the 257-series linked bundle at the time of the cleaning and conservation of the khipu in

1997.⁸ UR11 is composed of 176 cords borne on a primary cord that measures 132 cm in length. The overall distribution of cords on UR11 is in two groups: cords #1–#76 and #77–#176. The first group is of fairly closely spaced cords attached over a length of 27.0 cm. There follows a space of 5.0 cm, and then cords #77–#176 are attached over a distance of 35.0 cm. The primary cord terminates in a 59.5 cm -long “tail” (see fig. 11.1). The interpretation presented here involves only cords #1–#76, this is the group of strings in the left half of figure 11.1 (see this section in plate 7). The reader who wishes to view UR11 in all its details may go to the KDB website (<http://khipukamayufas.harvard.edu/DataTables.html>) and click on this sample in the section labeled “UR khipu—Leymebamba.”

Cords #1–#76 appear to be organized into several subgroupings, each composed of one white (W) cord associated with several darker cords. More specifically, the basic organization of cords #1–#76 is of fifteen sets of around six to eight cords each. For general, illustrative purposes, relevant data from the first four of the fifteen sets appear in table 11.1. As table 11.1 shows, each set of cords is organized as a group of four to six (or more) cords of a low value followed by a pair of cords of much higher, but generally quite similar, value. The first five (or so) cords are dark colored and/or mottled, while the final cord (i.e., the second of the pair of high valued cords) is white, or – from about the middle of the #1–#76 cord grouping to the end – light brown (= AB). My hypothesis concerning the recording function of UR11 focuses on the pairs of larger values. I cannot at the present time explain the smaller values. We may find in the future that these figures represent some ancillary, or perhaps corrective, values that are to be related or applied to the high valued pairs.

Table 11.2 lists the pendant cord identification numbers of each of the fifteen high-valued pairs on khipu UR11, their cord values, and then the average of these paired values. I have averaged the values together because I am hypothesizing that the paired values represent complementary population counts that were provided by two, probably moiety-based khipu accountants—one for Hanan, the other for Hurin—in the Chachapoya region (see discussions of moiety-based accounting in chapters 3, 4, 5, and 8).

What is quite striking about the paired values shown in table 11.2—aside from how close they are generally to each other and how different they are from their surrounding, lower values—is how they decline steadily yet precipitously as one moves down the table. The decline is from an average figure of 15,597 in the first set to an average of 3,305 in the last—a drop of 80 percent over fifteen steps. The arrangement of the



Figure 11.1. Khipu UR11 (author photo; courtesy of Centro Mallqu, Leymebamba, Peru)

Table 11.1. Partial cord distribution of khipu UR11

<i>Cord Number</i>	<i>Color Value</i>	<i>Knot Values</i>
1	W:MB	—
1s1	W:MB	4
1s1s1	W:MB	4
2	MB	52
3	W:MB	281
4	GG	15,746
5	W	15,448
6	W:MB	157
6s1	KB	4
7	MB	55
8	W:AB	263
9	BL:AB	10,809
10	W	11,056
11	W:MB	214
11s1	KB	23
12	MB	44
13	W:AB	258
14	GG	11,532
15	W	9,547
16	W:MB	211
16s1	KB	20
16s2	MB	22
17	MB	33
18	AB	236
19	BL:AB	8,764
20	W	8,592

Table 11.2. Paired intervals and their values in khipu UR11

<i>Pendant Cord Numbers</i>	<i>Paired Values</i>	<i>Average Value</i>
4 and 5	15,746/ 15,448	15,597
9 and 10	10,809/ 11,056	10,932
14 and 15	11,532/ 9,547	10,539
19 and 20	8,764/ 8,592	8,678
24 and 25	8,483/ 5,713	7,098
29 and 30	9,681/ 6,153	7,917
34 and 35	6,308/ 6,250	6,279
39 and 40	8,263/ 8,319	8,291
44 and 45	8,441/ 9,446	8,944
49s1 and 50s1	2,220/ 2,225	2,223
54 and 55	1,500/ 1,418	1,459
59 and 60	1,316/ 1,671	1,494
64 and 65	2,306/ 2,750	2,528
69 and 70	2,335/ 3,111	2,723
75 and 76	2,082/ 4,527	3,305

“steps” is also quite regular, moving by increments of five cords between the paired sets (e.g., from cords #4/#5 to cords #9/#10, etc.). I suspect that UR11 is a record of the steady decline of some resource throughout the Chachapoya area during late pre-Hispanic and early colonial times. The question is: What “resource” might have declined on the scale (i.e., 80 percent) and with the tempo of the values recorded in the fifteen sets of figures on the left half of UR11? The answer, I suggest, is population.

Population Counts in Chachapoyas

In her important and informative PhD thesis on the Chachapoyas area from pre-Hispanic to contemporary times, Danish anthropologist Inge Schjellerup brought together material from various ethnohistorical sources pertaining to the numbers of tribute-payers in Chachapoyas

Table 11.3. Numbers of tributaries in Chachapoyas

<i>Year</i>	<i>Tributaries</i>
1549	17,550
1559	16,309
1583	10,699
1586	8,062
1591	7,042
1601	5,626
1608	4,000
1793	2,200

Source: Data from
Schjelderup 1997:39–40

during the first two and a half centuries after the establishment of the colony, from 1549 to 1793. These figures are reproduced in table 11.3

For the period that is most relevant here, table 11.3 displays a record of decline in the number of tributaries in Chachapoyas on the order of 77.2 percent, beginning at the earliest date (1549), with a count of 17,550 tributaries, and continuing down to the count of 4,000 tributaries in the early seventeenth century. This is consistent with general figures for the population decline throughout the Americas in the first two centuries or so following the Spanish conquest.⁹ As Charles Gibson writes,

Indians were all but extinct in the West Indies by the 1540's . . . In many tropical areas of the mainland [i.e., Central America] Indians were sparse or wholly nonexistent by 1600, and in the highland areas population losses up to 90 per cent were not uncommon by the early seventeenth century. The most painstaking of modern studies records a decline in New Spain from about 25 million in 1519 to slightly over one million in 1605. Depopulation in South America has not been computed so precisely, but it is at least possible that it was equally severe.¹⁰

Cook (1981) has shown that the Chachapoyas area underwent a severe demographic collapse and economic stagnation following Spanish entry into the region, which began in 1536.¹¹ It is important to note that, as elsewhere in the Americas, the colonial era population decline in communities throughout the Andes was not wholly a matter of death by disease, war, and other causes, rather, it was these factors combined with people simply picking up and moving away from their former (pre-Hispanic) communities, where they would otherwise be accounted for

Table 11.4. Radiocarbon readings and calibrated dates* (CalPal online) from Laguna de los Cóndores, Centro Ma'lqui

Lab Num	Sample ID	δC^{13} value	Years from modern	C^{13} age BP	Cal AD
T12820	CMA628	-11.3	419 +/-36	1422-1624	AD 1479 +/-38
T12818	CMA373	-26	414 +/-35	1426-1624	AD 1501 +/-58
T12819A	CMA419	-21.9	403 +/-35	1433-1626	AD 1518 +/-70
T12822A	CMA479	-22.5	379 +/-34	1443-1630	AD 1531 +/-69

*68 percent range calBP

in censuses. This was apparently particularly common in the Chachapoyas area, where, as noted by Cook,¹² the natives often escaped into the tropical lowlands along the Huallaga and Ucayali Rivers, to the east

While the percentage of decline in numerical values down the length of table 11.2 (from UR11), is strikingly similar to that shown in table 11.3, the question that arises is whether there might be some basis for suggesting that the rate of decline noted in UR11 might have been similar, or even related, to the dwindling number of tributaries? That is, might table 11.3 be a Chachapoya record of population decline over a period comparable to all or a portion of that recorded in table 11.2?

We have a set of C^{14} dates from khipus and associated material found at Laguna de los Cóndores, including one for a khipu, UR2, that was tied (along with UR11) into the 257-series khipus. In 2000 I submitted four small fragments of khipu strings, as well as a small string fragment from a textile found associated with a khipu, all from Laguna de los Cóndores, for dating at the University of Arizona NSF Accelerator Mass Spectrometry (AMS) laboratory. It is important to point out that C^{14} dates that fall during the middle to latter part of the Inka expansion out of the Cuzco basin (ca. mid fifteenth century AD) until a century or so after the European invasion of the Andes, beginning in 1532, are notoriously uncertain and imprecise in terms of their conversion to calendar years.¹³ The calibration curve for dates in this range contains bumps and kinks that generally give two possible conversion ranges.

The conversions to calendar dates for four of the C^{14} samples from Laguna de los Cóndores (table 11.4) fall, with 95 percent probability, within a range around AD 1422-1520 or around AD 1570-1630 (Warren Church, personal communication, 2013).¹⁴ The earlier range of dates begins around the probable time of entry of the Inkas into Chachapoyas and ends some sixteen years before the Spaniards entered Chachapoyas,¹⁵ the later dates cover the period from the time of the Toledan

reforms, beginning in the early 1570s, through the time of established colonial administration in the area

The earlier range of dates (AD 1422–1520) seems more likely for our samples, as these objects—the *kipus*—are almost certainly a result of Inka domination and administration in the region. On the other hand, the latter temporal spread (AD 1570–1630) might be just as likely a dating for these *kipus*, since, as noted earlier, a fair number of colonial era artifacts were found with the burial remains at Laguna de los Cóndores.¹⁶ Little can be gained by trying to choose one set of dates over the other arbitrarily, which would create the false impression of certainty about the dating of the *kipus*. Therefore, what I propose to do, at least initially, is simply to accept the total period covered by these dates—i.e., from 1422 to 1630—as representing the general temporal range during which the cord devices were produced and used by the people living around Laguna de los Cóndores.

I hypothesize that the record of (descending) numerical progression evident on *kipu* UR11 represents a local, Chachapoya version of population counts kept by Chachapoya Inka administrators in the region during the late pre-Hispanic era and then, later, by Spanish colonial officials in early colonial times. This hypothesis requires that the numerical progression in UR11 (table 11.2) fit the sequence of diminishing population figures, keyed to years in the Western calendar, shown in table 11.3. According to this hypothesis, cords #1–#76 of *kipu* UR11 would represent a record of the censuses of tributaries and their inexorable decline, in the Chachapoyas region over a period beginning soon after the Spanish census of 1559—when 16,309 tributaries were noted in the region and for which UR11 contains a count of 15,597—until sometime soon after 1608, when the Spanish counted 4,000 tributaries and the last paired set of figures in UR11 give an average total of 3,305.

In summary, the hypothetical construction derived above would suggest that the UR11 “tributary counts” began around 1570 and ended around 1625. This period of time, spanning some fifty-five years, more or less coincides with the span of the second calibration peak for the C¹⁴ samples discussed earlier (i.e., AD 1570–1630). It will be noted that the date of initiation of this hypothetical native population count also more or less coincides with the beginning of the Toledan *visita* campaigns, in 1571. In light of this fact, I would suggest that, if *kipu* UR11 was, indeed, an accounting of the Chachapoyas tributary population, then its purpose could have been to serve as a check on Spanish population fig-

ures, the latter of which were used in the calculation of tribute in the new colonial province of Chachapoyas.

Before ending this discussion of UR11, I should say a word about the preconquest and early colonial Chachapoya political landscape assumed in the above construction. The numerous chiefdoms, ethnic groups, and/or ayllus that occupied the Chachapoyas region before the time of the Inka and Spanish conquests have often been portrayed as divided. Indeed, the polity named "Chachapoya" by the Inka was, at best, a very weakly integrated collection of peoples who recognized no stable, central authority and who came together only sporadically, in response to threats from the outside.¹⁷ If this was the case, and if, therefore, there was little or no internal unity, collective oversight, or governance among the peoples in this region, then it would be difficult to imagine a band of *khipu*-wielding functionaries in the region (e.g., at Laguna de los Cóndores) who recorded census and other data over a half-century, especially if this coincided with the great political and demographic disruptions following the Spanish invasion. If some level of oversight and administrative governance did not, in fact, exist before, during, and after the region was conquered by the Inkas, then it would be hard to sustain the interpretation of the significance of the numbers recorded in UR11 developed here.

Contrary, however, to the portrayal of the Chachapoya as a group of usually autonomous, dispersed, and largely disunited polities, there is at the same time a fairly striking and widespread record of unity and stylistic similarity that is sufficiently coherent to allow archaeologists to recognize "Chachapoya" styles in material culture such as architecture, ceramics, and imagery.¹⁸ In addition, it is important to recognize that present-day views of Chachapoyas as "remote" and its population as lacking a sense of unity may reflect attitudes prevalent from colonial times to the present day. Certainly such a view is at odds with Garcilaso de la Vega's (or his principal informant on this matter, Blas Valera's [who was from Chachapoyas]) depiction of this region as rapidly unified at the time of the Inka advance on the region.¹⁹

There are no good ethnographic data bearing on the question of the degree of unity among ethnic groups and ayllus in Chachapoyas in pre-Hispanic and colonial times. While a critical perspective about notions of high levels of unity in pre-Inka sociopolitical organizations should certainly be maintained, we ought at the same time to resist accepting without question colonial and contemporary views on the state of

(dis)unity in this region, views that may have been based largely on the remoteness of Chachapoya from the political centers, whether Cuzco or Lima. Such a stance would allow us to view without preconceived notions new evidence that might bear on the issue of Chachapoya political cohesion—such as the information recorded in the collection of *kipus* discovered at Laguna de los Cóndores.

Khipus from a Colonial "Revisit" to the Santa Valley

THE "ROSETTA KHIPU"?

Students of the khipu have long believed that the most propitious circumstance for "deciphering" the Inka cord-based system of recording would be the discovery of a khipu and its written transcription – a fabled "Rosetta khipu." This chapter details what is, to the best of my knowledge, the first such match.¹ I stress, however, that the link between a cord record (in this case, multiple khipus) and documents pertains not to pre-Columbian cord keeping but rather to the postconquest (post-1532) colonial period tradition. As I have noted in earlier chapters, khipu cord recording and the European tradition of written documents based on alphanumeric script coexisted through much of the colonial era and down to the present day.²

Beyond detailing what I believe is the first known match between cord keeping and the written record, I alert the reader to the uncomfortable circumstance that this case study raises a number of heretofore unrecognized problems and interpretive conundra, all tumbling out of the proposed "match." These problems relate to issues of status, power, prestige, and techniques of cord keeping and khipu semiosis in early colonial Andean communities that have lain out of sight, just under the surface of the rhetoric of colonial administrative documentary production. The exposure of these issues awaited a circumstance in which we could directly compare a khipu and its written transcription or, as appears to be the twist in the extraordinary case discussed below, the khipu "transcription" of a written document.

The above comments and provocative suggestions may strike (healthily) skeptical readers as exaggerated and/or immodest in the absence of details of this supposed khipu/document "match." Therefore, I turn first to a description of the details of the match, after which I

will take up the questions and problems these new data raise for the study of cord keeping and administration in the preconquest and colonial Andes.

A Colonial Census and Re Taxation Record

The document side of the *kipu*/document match involved a colonial *revisita* (revisit) carried out in a village on the north central coast of Peru, in 1670. Revisits were administrative procedures, often called for by officials (*curacas*) of local communities, undertaken to carry out a new census with the purpose of reassessing tribute requirements. Revisits were necessary when the population in a village fell significantly below an earlier census count and the tribute, based on the earlier count, had become onerous for the reduced population. In the revisitation process, an official—the *visitador* (visitor)—came to the village, accompanied by a scribe. Working with local authorities, the recount proceeded either by going house to house or by calling all residents to the central plaza (see chapter 10). In most visitations, the visitor was accompanied by the local *kipukamayuc(s)*, who would bring along the *kipu* from the previous census count.

The 1670 *revisita* pertained to the recount of the Recuayes (Recuay) Indians, who had been resettled during the previous century into the town of San Pedro de Corongo (province of Conchucos), located in the lower middle Santa River valley. The village was (and still is today) located along a small tributary just to the northeast of the great bend in the mid lower Santa River (see fig. 12.1). The document in question, entitled *Padrón de indios tributarios recuayes Conchucos 1670*,³ contains a *padrón* (list, registry) of the Recuay *tributarios* (tribute payers) counted in the stated year. The revisit was carried out by Maestro de Campo don Jacinto Romero de Camaño y Sotomayor, with the assistance of the local headmen, who are referred to in the document as *caciques pachacuracas* ("headmen/leaders of the one-hundreds"). The tributaries were organized into six *pachacas* (one hundreds), or *ayllus*. As we saw in chapter 3, the term *pachaca* referred to an accounting unit of one hundred tribute-payers, a precise, round sum that was probably seldom realized on the ground. As I noted earlier, colonial sources often link the *pachaca* accounting unit with the *ayllu*.⁴

The document states that there were 132 tribute payers among the Recuay Indians, organized into six *pachacas/ayllus*, in San Pedro de Corongo. It contains lists of the names of the tributaries in their respective

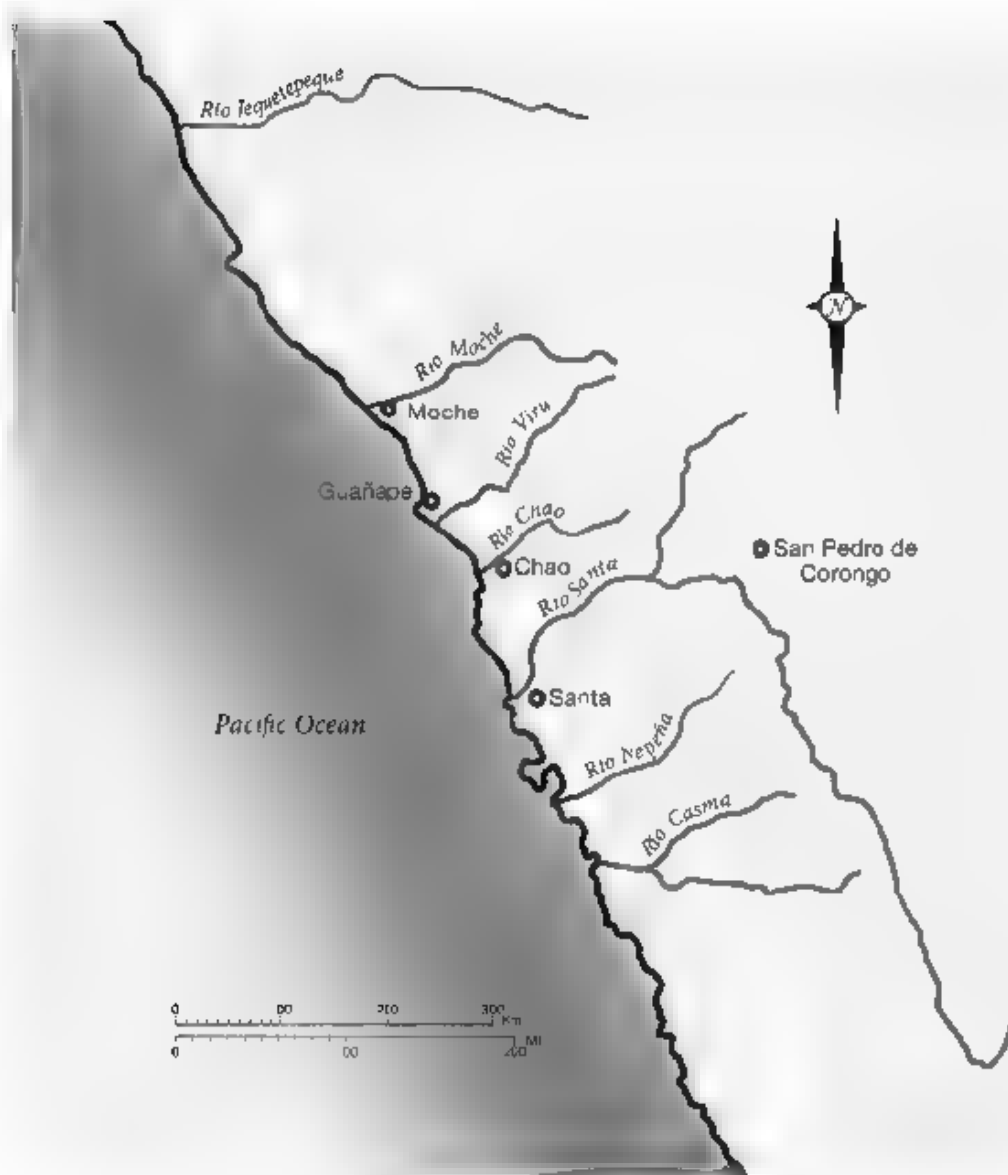


Figure 12.1. Santa valley (map by, L. I. L. Meyerson; used by permission)

pachacas/ayllus (see appendix A at the end of this chapter). The total numbers of tributaries in the six pachacas were as follows: Namús (19), Corongo (23), Cuyuchin (9), Cusca (7), Guauyan (41), Ucore (32). The alert reader may note, in fact, that these numbers sum to 131; however, the document states explicitly and repeatedly that there was a total of 132 Recuay tributaries: *son los d[ic]hos ciento y treinta y dos Yndios ausentes y presentes contenidos en la d[ic]ha lista y numeración* ("these are the said 132 Indians, present and absent, contained in the said list and enumeration" [of tributaries]).⁵

As for the amount of tribute levied, the document states that each tributary owed 2 pesos, 7 reales, and 3 quartillos in specie (i.e., coin). It was the custom in the colonial Andes to levy tribute in three forms: specie, goods (e.g., agricultural produce, manufactured items), and

labor. Given the stated amount to be paid in specie by each tribute-payer, the total owed by the 132 Recuay Indians should have totaled around 363 pesos ($2.75 \times 132 = 363$). The document states explicitly, however, that the total specie obligation was 367 pesos, one-quarter real, and one quartillo: "The said Recuay Indians of the repartimiento [tax district] of Apallasca reduced into the said town of San Pedro de Corongo must pay in the said semester of Christmas of this said year three-hundred and sixty seven pesos one quarter Real and one quartillo."⁶

After reporting the new census count and the new tribute assessment, the Recuay/Corongo document goes on to state that the tribute that was to be paid by the six ayllus/pachacas was to be recorded on a *quipu* (khipu):

[I]n charging the said tribute for the said third period [tercio] of Christmas in the present year of one thousand six hundred and seventy, before beginning the charge, announce the distribution [of the tribute obligation] in the said town of San Pedro de Corongo in the Spanish language, and in the general language of the Inca [i.e., Quechua] on the day of the feast [of Navidad/Christmas] at the hour of mass, bringing all the people together so they will understand, so that each one will know what should be paid [in tribute] and this should be entered in *quipu*.⁷

In summary, the document from San Pedro de Corongo details an intriguing case, from 1670, in which 132 tributaries belonging to a collection of six pachacas/ayllus of Recuay Indians in a village located on an affluent of the Santa River valley underwent a recount—a *revisita*—on the basis of which they were assessed a total specie tribute of 367+ pesos. This census and tribute information was to be knotted into a khipu, or khipus, at the end of the revisitation process. In the following, I discuss information pertaining to six khipus, which, I believe, may constitute the actual khipus referenced in the San Pedro de Corongo document.

The Radicati/Santa Valley Khipu Archive

The supposed matching khipus formed part of the collection of the late Italian-Peruvian student of Inka cord keeping, Carlos Radicati di Primeglio, at the time of his death in 1990.⁸ Radicati published several works in which he described and analyzed one or more of the khipus in question, which he collectively referred to as an "archive" (plates 8–13). Most

notably, in his monograph *La "seriación" como posible clave para descifrar los quipus extranumerales* (Seriation as a possible key to the decipherment of extra-numeral khipus, 1964), Radicati focused on these six samples in an effort to develop a theory for how he thought "narrative"—or what he termed "ideographic"—khipus were encoded with meaning and how they might have been read, or interpreted (in my view, Radicati's arguments in this regard are not convincing, and I pass over them here without further commentary).

There were two circumstances that led Radicati to claim that these six khipus constituted an "archive." In the first place, he says that when he acquired the khipus, he was told—by a source whose identity he does not specify—that they all came from the "same tomb someplace within the Santa valley."⁹ From his discussion of the provenience of these samples, it is clear that Radicati did not know the specific site or archaeological context where the khipus were found. Nonetheless, Radicati felt confident in proceeding under the assumption that the samples were from the Santa valley and that they had constituted an archive. Furthermore, he went on to assert that the six khipus were discovered together in a tomb, probably (he claims) "near the mouth" of the Santa valley.¹⁰ Radicati did not provide any evidence to support his assertion that the khipus came from near the mouth of the Santa River, as opposed to the middle or upper valley. Therefore, we will set his statement on this point aside (on the lack of evidence in support of it) and retain the general provenience attribution of this khipu archive as from the "Santa valley."

The second reason Radicati asserted that the six khipus formed an archive was because of the striking similarities of structure and color among the samples. As we will see in some detail below, these similarities include most notably the organization of the 804 pendant cords (excluding a handful of subsidiaries) that make up the six khipus into a total of 133 of what I term "six cord groups"; this phrase pertains to the consistent formatting of cords into color-coded, or "color-banded," sets of six cords. That is, on the Santa valley khipus a group of six cords of one color is adjacent to another six cords of a different color, followed by another six of a color different from the second group, and so on (see fig. 12.2). At the level of cord formatting and organization, there is a (virtual) equivalence between the number of six-cord groups in the six Santa valley khipu archive (~ 133), on one hand, and the organization of tributaries in the six pachacas/ayllus of Recuay Indians in San Pedro de Corongo in 1670 (= 132) on the other hand.

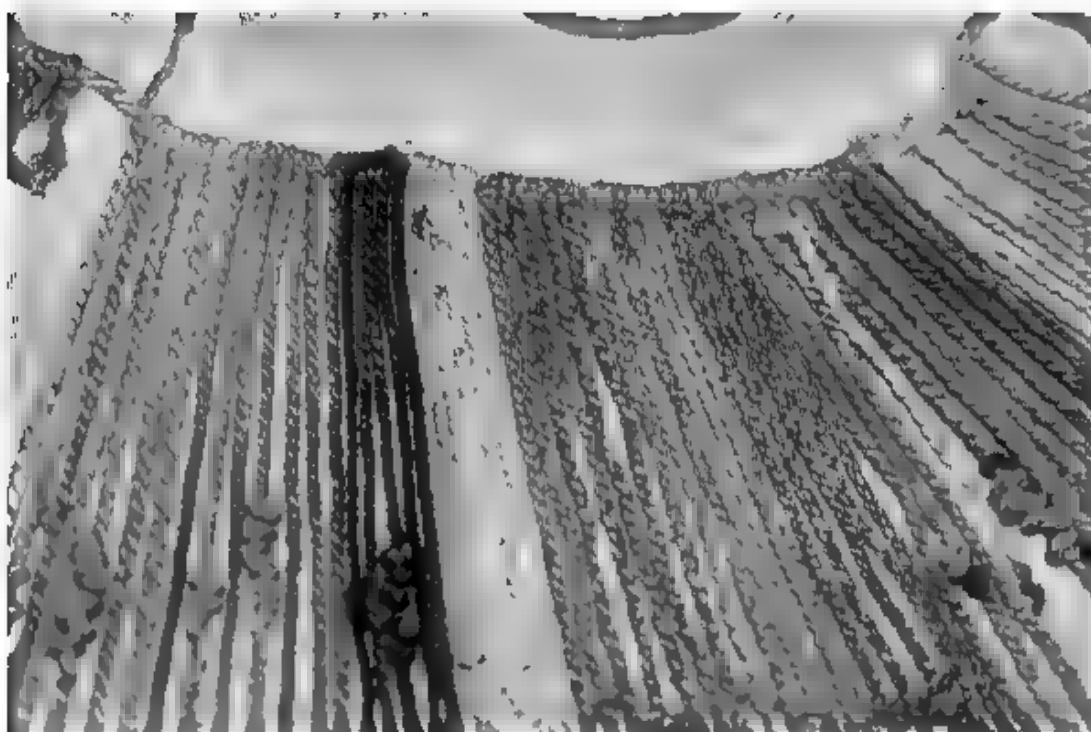


Figure 12.2. Color banding in khipu JR89 (author photo, Fundación Tempie Radicati, Universidad Nacional Mayor de San Marcos, courtesy of Dr. Manuel Burga D., rector, 2006)

I don't think there is cause to become overly skeptical about my claim as a result of the difference between the number of six-cord groups on the khipus (133) and the number of tributaries in the six ayllus (132). In fact, we have already seen a near identical discrepancy between the number of tributaries listed in the San Pedro de Corongo *padrón* (131) and the number claimed in the text of the document (132). I think that what we are seeing here is a version of the on-the-ground "noise" in local record keeping similar to what we saw in the level I khipus in the Puruchuco accounting hierarchy (chapter 5).

As color banding will become central to our argument relating the Santa khipus to the San Pedro de Corongo document, I have provided in table 12.1 the following information for each of the six Santa khipus: (a) the identifier-designation (i.e., both the UR number and the Radicati di Primeglio [RP] number) used for each of the six khipus, (b) an accounting of the total number of pendant cords borne by each, and (c) the total number of six-cord groups into which the pendant cords of each khipu are organized.

If the Santa khipus are the actual samples that recorded the data in the Recuay/Corongo document, the khipus would have to be shown to record tribute data; specifically, we would expect to see a notation of the data concerning the total specie to be paid by the Recuay per ac-

Table 12.1. Santa Valley *khipus* with cord and six-cord group totals

<i>Khipu Designation</i>	<i>Total Cords</i>	<i>Total Six-Cord Groups</i>
LR87/RP6	288	48
LR88/RP1	54	9
LR89/RP5	204	34
LR90/RP3	108	17
LR91/RP2	90	15
LR92/RP4	60	10
TOTALS	804	133

counting period, or *tercio*—that is, 367+ pesos. In order to develop an interpretation of the information recorded on these samples, as well as to attempt to establish a direct relationship between the Santa valley *khipu* archive and the collection of *pachacas/ayllus* referenced in the San Pedro de Corongo document, it is necessary to discuss an unusual organizational feature of the numerical data recorded on the 133 six-cord sets that make up the *khipu* archive; I refer to this feature as “positional notation.”

Defining Place and Position in the Santa *Khipu* Six-Cord Sets

In explaining the positional notation format of the Santa valley *khipus*, I note that each of the cords in a six-cord set has a particular numerical character, or value (in the knotted-cord decimal numeration system), relative to the numerical values tied into the other five positions in the set. An informed description of positional notation as it exists in the Santa valley *khipu* set requires that we define clearly what I am referring to as the “first” and “last” positions in the six-cord color-banded sets. As I have explained earlier (chapters 5 and 8), students of the *khipu* record observations in a standard notational format, the practice since the time of L. Leland Locke.¹¹ We begin the recording of pendant cords at the end—referred to as the “head”—where the cords lie nearest to the knotted, tasseled, or doubled end of the primary cord (see fig. 2.2). As for the direction—moving right or left—of recording pendant cords from the head to the tail, it is obvious that a *khipu* may be placed on a table for study so that the head is either to the left, in which case one will record pendant cords from left to right, or to the right, in which case recording will proceed from right to left. In either direction, the

“first” cord of a six cord set will be the one nearest to the head end of the khipu primary cord, while the “last” cord of that set will be the one nearest to the dangle end, or tail.

I note that each cord position in the Santa valley khipus carries a more or less stable value relative to those recorded on the other five cords of that set. For instance: the fourth cord always carries the highest value among the six cords; cords #2, #3, #5, and #6 generally carry low values (i.e., lower than cord #4, higher than cord #1); and finally, cord #1 carries a low value (between zero and thirteen), and a given value in position #1 is commonly repeated over several six-cord sets. Moreover, as I explain later, the value of the first cord (position #1) in a six-cord set appears to determine condition, or at least vary in relation to the values knotted into the cords at positions #2–#6. That is, as the knot value (i.e., the numerical magnitude) of cords in position #1 increase, the values/magnitudes knotted into the other five positions increase accordingly. These interrelated characteristics of relative values in the six-cord groups will become critical to my argument about the kind(s) of data that were recorded on the Santa khipus.

I give examples of the positional notation labeling system in the Santa valley khipus in table 12.2, drawing on segments of two khipus, UR88 and UR91.¹² The three columns in table 12.2 provide the following three types of information (from left to right) for each of these two khipus: (1) the numerical sequence of pendant cords along the primary cord, beginning with cord #1; as mentioned elsewhere in this book, numbers in this column that are followed by an -s and a numeral indicate a subsidiary to the pendant cord bearing that number (e.g., 2s1 = subsidiary #1 of pendant cord #2), (2) the color code notation indicating the color(s) observed in the pendant cords and subsidiaries,¹³ and (3) the numerical values of knots tied into pendant cords and subsidiaries, attained by reading the knots as tied in decimal-place notation.

We see in the left hand and center columns of each of the two sets of three columns in table 12.2 that, with only a couple of exceptions, color changes divide the pendant cords into six-cord groupings (the subsidiary cord colors may be different from the color of the pendant cords to which they are attached). I have highlighted in boldface the “first” cord of each of the six cord groups. From these markers, we see on khipu UR88, for instance, that the numerical value of cords that stand in the first position of all six-cord groups (i.e., pendant cords #1, #7, #13, etc.) is 9; for khipu UR91, each cord in position #1 is valued 4. Values on the

Table 12.2. dentity labels in two Santa Valley khipu.

<i>UR88</i>			<i>UR91</i>		
1	LG:AB	9	1	W	4
2	LG:AB	47	2	W	3
2s1		21	2s1		10
2s2		3	3	W	2
3	LG:AB	9	3s1		
3s1		20	3s2		5
3s2		3	4	W	47
3s3		1	4s1		3
4	GG AB	157	5	W	5
4s1		2	5s1		1
5	LG:AB	10	6	W	12
6	LG:AB	19	7	AB	4
7	AB	9	8	AB	2
8	AB		8s1		3
9	AB	14	9	AB	5
9s1		10	9s1		1
9s2		1	9s2		2
10	KB	160	10	AB	52
10s1		3	11	AB	12
10s2		1	11s1		3
11	MB	19	12	AB	8
11s1		1	13	RB	4
12	AB	18	14	RB	5
13	YB	9	14s1		3
14	YB	57	15	RB	5
14s1		8	15s1		3
15	YB	11	15s2		
15s1		25	16	RB	64
15s2		3	17	RB	6
15s3			18	RB	8
16	W	176	19	AB	4
16s1		1	20	AB	7
17	W	15	20s1		2
17s1		5	21	AB	5
17s2		4	21s1		1
18	W	17	22	AB	70
19	AB:GG	9	22s1		1
20	AB.GG	10	23	AB	6
20s1		26	23s1		
20s2		2	24	AB	2
21	AB.GG	9	25	MB:W	4

other cords (and any subsidianes) of the six cord groups vary from one set to the next in what, as suggested above, appear to be patterned arrangements. (For the full data on the six cord groups on all six of the Santa valley khipus, see appendix B at the end of this chapter.) I will return to consider the possible nature, or referent(s), of the values recorded on the cords of the six-cord groups after exploring the general principle of positional notation as evident in the Santa valley khipus

A Note on Positional Notation

As discussed earlier, the phrase “positional notation” means that each position in the six-cord groups carries a particular class, or type, of information. I argue that the value i.e., the cord color plus knot(s) registered on a cord standing in a particular position in the six-cord groups would have been read, or interpreted, in the specific register, key, or modality appropriate to that particular position. Do we have any familiar examples of what I term “positional notation”?

An example of a form of positional notation is our own system of decimal place-value numeration. For example, if we write the following sequence of integers and punctuation signs 215,642, we know from its arrangement (and often its context) that such a configuration generally refers to the position (place)-based principle of decimal numeration. From this, we understand that beginning on the far right hand side of the set of ciphers, we are to value this digit as the sum of units (ones) that are to be enumerated, the sign/integer immediately to the left represents a value to be multiplied by ten, and the integers occupying each subsequent place, or position, to the left are to be multiplied by an increasingly higher power of 10 (i.e., 100, 1000, etc.).

While most definitions of “positional notation” refer to numeration systems (e.g., binary, decimal, etc.), such systems are only one class of what is a seemingly very large number of “positional” based notation systems—systems of organizing and assigning values to signs in which each place has a determined value. Other examples include the arrangement of numerals, letters, and punctuation marks for recording time (e.g., 11.36 a.m.), the collection of signs for indicating global positioning (e.g., 12°0'S 77°2'W); and the arrangement of numerals and hyphens specifying various data composing an ISBN number (0-292-78540-2 – language publisher edition “check right”). For each one of these positional notation arrangements, knowledgeable interlocutors, regardless of the language they speak—for these are semasiographic strings

of signs—can interpret the meaning, significance, and referent(s) of the particular collection of signs. Such a “reading” depends on knowledge of the context, principle, or structured valuations on which the given system is based.

The Referents of Positional Notation in the Santa Valley Khipus

What is/are the principle(s) that shape and structure positional notation in the Santa valley khipus? What information is recorded on those samples? We can abstract or summarize from our description of the system a format in which each position carries a value with a standard, or set, size (i.e., quantity) relative to the values in the other five positions. This would mean that the values across any given six-cord group are interdependent.

The principal features of the formatting of these khipu cord groupings may be summarized as follows:

- a. one position (= position no. 1) holds a value between 0 and 13 that is relatively stable over multiple six-cord groups;
- b. one position (= position no. 4) usually holds the highest value in the group,
- c. one position (= position no. 2) usually contains the second-highest value in the group,
- d. the unequal, or asymmetrical, pair in positions no. 2 and no. 4 generally contains higher values than are registered in the other four positions (position nos. 1, 3, 5, and 6); and
- e. the values recorded in position nos. 3, 5, and 6 are generally of similar magnitude

What types of information might be encoded by this pattern of interrelated positional values? From my initial research on these khipus, beginning in 2009, I suspected that the Santa valley positional notation system refers to the recording of colonial tribute. In such a system, the values in position no. 1 might represent the amount of pesos (from 1 to 13) required of tribute-payers. Oddly enough, this value was variable in the Santa valley cord groupings, whereas colonial tribute accounts almost always assign a uniform amount of specie to be collected from each tribute-payer. Thus, the variability in position no. 1 presented a conundrum. Following from the suppositions that these samples might record tribute and that position no. 1 recorded the amount of specie, the other five positions might therefore refer to noncurrency tribute items

(e.g., agricultural produce, blankets, baskets of dried fish, chickens, etc.). A review of various colonial tribute lists demonstrates that the number and kinds of goods required from community to community across the Andean landscape can be highly variable and that no single formula seems to fit all (or even a majority of) cases.

Because of this variability and the inconsistencies in tribute data, as well as a variety of other interpretive conundra which confronted me as I studied the Santa valley khipus, my analysis of this archive stalled for a couple of years, until 2011. It was then that I encountered—tucked away in my own library (unread until then)—the monograph about the document describing the revisit to the six pachacas/ayllus of Recuay Indians in San Pedro de Corongo, in 1670. The data in that document seemed to coincide to a remarkable degree with the structures and values of the positional notation arrangement in the six khipus—and both the khipus and the document were from the Santa valley.

Connecting the Santa Khipus to the Recuay Document

As we saw above, the pendant strings on the six Santa valley khipus are organized by color banding into varying quantities of six-cord groupings. A total of 133 six-cord groups make up the six khipus. The 133 groups are distributed across the six khipus in the following numbers: UR90 (17), UR89 (34), UR92 (10), UR88 (9), UR91 (15), and UR87 (48). I hypothesize that the six Santa valley khipus are the records of tribute payments of the six pachacas of Recuay Indians in Corongo in the seventeenth century, and that each one of the 133 six-cord groups on the khipus represents the tribute obligations of one of the 132 tributarios of Corongo. The coincidence (or lack thereof) between the numbers of tributaries and the numbers of six-cord units in the six khipus is shown in table 12.3.

I return below to a discussion of the lack of exact correspondence between the Corongo pachacas and the khipu counts, an issue to which I alluded earlier. According to the proposed match outlined above, each khipu should represent an ayllu/pachaca accounting record, and each six-cord group within each khipu should represent the data pertaining to one tributary household within the respective Corongo pachacas. The principal tribute values recorded in the Recuay/Corongo document are the total amount of specie demanded of each tributary (– 2 pesos, 7 reales, and 3 quartillos) and the total for the community as a whole (= 367 pesos, one-quarter real, and one quartillo).

Table 12.3. Recuayes Indios, Conchucos/
Corongo (1670)

<i>Pachaca/Tributaries</i>	<i>Khipus/Six Cord Groups</i>
Namus (19)	LR91 (15)
Corongo (23)	LR90 (17)
Cuyuchin (9)	LR92 (10)
Cusca (7)	LR88 (9)
Glauyan (41)	LR87 (48)
Lcore (32)	LR89 (34)
6 (132)	6 (133)

When we sum the values recorded on position no. 1 cords in the 133 six-cord groups on the six Santa valley khipus, they total 359. However, two of the position no. 1 cords are broken. One of these cords (UR 90, cord #45) is located at a point where the position no. 1 values vary between 4 and 5; the other (UR89, cord #171) is at a point where position no. 1 values are consistently 4. Therefore, if we add these values back into the position no. 1 total, we arrive at 367/8 (i.e., $4/5 + 4 + 359 = 367/8$), precisely the total amount of specie required of the six pachaca/ayllus of Recuay Indians in 1670.

What is curious here is that the position no. 1 values vary between 0 and 13. As I noted earlier, we have generally assumed that all tributaries in a community paid an equal amount in tribute, and this is certainly how it is presented in colonial documents. If position no. 1 cords record the amount of tribute paid by the 132/3 tributaries, however, this suggests that the amount of tribute (in specie) paid by different tribute-payers in San Pedro de Corongo varied between 0 and 13 pesos, a circumstance that is at odds with the notion of the ideal of uniformity in the tribute obligation of tribute payers, as stated in colonial tribute documents. This is the second of two problems confronting the presumption of a “match” between the Corongo document and the six khipus from the Santa valley.

In summary, I am arguing that we have in the Santa valley khipu archive and the Recuay/Corongo document the first match between a (set of) khipu(s) and a document. As I stated in the introduction, however, this suggested “match” appears to open up as many – if not more – questions as those it might answer. I address several of these in the following section.

Problems Arising from the Proposed Khipu/Document “Match”

The problems that arise from the suggested khipu/document match are the following:

- a. If position no. 1 values refer to specie paid per tributary, what might the values in the remaining five positions refer to?
- b. If position no. 1 values refer to specie paid per tributary, why do these amounts vary (i.e., why wouldn't every tributary pay the same amount, as stated in the document)?
- c. If the six khipus of the Santa archive do indeed record the census figures referenced in the Recuay, Corongo document, why don't the numbers of six-cord groups in the various khipus match the numbers of tributaries in the six Recuay pachacas/ayllus?
- d. And finally, if the Santa archive is the actual cord recording of the identities and proceedings written into the Recuay/Corongo document, how might the 133 six-cord groups in the khipus record, or sign, the actual names of the 131 tributaries recorded in the list of tributaries in the document (see appendix A to this chapter)?

I preface my responses to these questions by restating the single, all-important premise: The six khipus from Radicati's Santa valley khipu archive are the cord accounts alluded to in the revisitation document detailing the census and tribute of Recuay Indians in San Pedro de Corongo in 1670. Only if this premise is valid, and can eventually be confirmed to be so, will the responses given below have any possible relevance in moving our studies forward. While I must leave it to readers to render their determination on the basic premise, I believe that there are, in fact, sufficient correspondences between these two sets of records to confirm the validity of the suggested match.

As for the problems raised from the discussion above:

(a) *If position no. 1 values refer to specie paid per tributary, what might the values in the remaining five positions refer to?*

The sums of all values in the six positions in the six Santa khipus are given below

Position no. 1:	359 (plus broken cords [see above] – 367/8)
Position no. 2	1,512
Position no. 3:	434
Position no. 4	4,876

Position no. 5:	611
Position no 6	616

Asking what the values in position nos. 2-6 might relate to takes us back to the issue of "positional notation," discussed earlier. That is, if we take as a basic premise for our interpretation the notion that the values in all six of the positions are interrelated according to some meaningful, standardized principle(s) of valuation and signing (e.g., such as we are familiar with in decimal numeration, telling time, global positioning, etc.), as I believe I have demonstrated they are, is there a known system of notations that could produce the specific values and relative proportions given above? According to the suggestion that position no. 1 values pertained to the recording of tribute in specie demanded of the six pachacas/ayllus of Recuay Indians of San Pedro de Corongo, in 1670, values in position nos. 2-6 ought to record additional tribute items. Unfortunately, the document does not list additional items of tribute that were demanded of the Recuay people.

Staying with the presumed context for valuation (i.e., tribute), the only suggestion I can make for how any of the values recorded in any of the other positions may have been arrived at is for either position no. 5 (- 611) or no. 6 (- 616). Might one or the other of these figures be a total population count of Recuay people in the village during the year of the recount? In the study of pre-Columbian and colonial population counts in the Andes, the figure of five people/household is often used as the standard for calculating the average household size in those cases in which documents record only the count of tribute-paying male heads of households.¹⁴ If we use the multiplier of five, and if the number of tribute-payers in San Pedro de Corongo in 1670 can be set at 132/3, this produces a total population estimate of 660/5. This is close to the sums of values registered in both position no. 5 and position no. 6. I do not see a basis for distinguishing between these two positions in terms of suggesting a connection to a possible total population count.

I am unable at the present time to suggest values, or identities of tribute items, that may have been related to the other positions (i.e., nos. 2, 3, and 4). As anyone who is familiar with the range of goods demanded of communities in the Spanish colonial tribute system will realize, there was a tremendous variety of items demanded as tribute from one community to the next.¹⁵ The one certain item on the list of demands was pesos per tributary, which was usually set between 3 and 8 pesos, but beyond that, a host of different and varied items could be

included, usually depending on what was most readily available in the community—from salt to feathers, camelids, chickens, even packets of lice, or whatever was manufactured in the village (from textiles to salted fish). In light of the tremendous range of possibilities, I do not have good suggestions to offer for what might have been accounted for in position no. 2 (= 1,512), no. 3 (= 434), or no. 4 (= 4,876).

(b) If position no. 1 values refer to specie paid per tributary, why do these amounts differ (i.e., why wouldn't every tributary pay the same amount, as stated in the document)?

Spanish authorities generally assessed a certain contribution in specie (*pesos ensayados*, "assayed pesos") that was to be paid by each tribute-paying male villager; this sum was commonly fixed at between 3 and 8 pesos per tributary.¹⁶ Given that in the written colonial tribute documents, these amounts are always described as a set amount for each tribute-payer, the question as to why these sums vary between 0 and 13 (pesos) arises.

I think there is every reason to turn this question on its head, and ask, since payments were being made locally and generally were overseen only by local officials (i.e., the *caciques principales*), why should we not expect that this aspect of the tribute process would be opened up to negotiation among villagers? As far as I am aware, the Spanish officials didn't care who—i.e., what individual(s)—paid the tribute, they simply insisted that the total amount demanded be turned over at the appropriate time. In fact, I cannot imagine a scenario in which the Spaniards would get into the business of ensuring fairness and equality in the payment of tribute. An equal distribution of the tribute demand would conform to what we, and perhaps the Spanish tax collectors, would understand as an abstract principle of "fairness" in the payment of tribute; but why should we suppose that "fairness" was a valued or operative principle among local people in such early to mid-colonial communities as San Pedro de Corongo?

In general, tribute remits in the form of *pesos ensayados* were deposited into the *caja de comunidad*, a treasury box that was controlled by the *cacique principal*.¹⁷ I feel confident in saying that as long as the appropriate sum was deposited in the *caja* at the end of the tribute period, there is no reason to think that the ideal of an equal distribution of the tribute burden over the group of tribute-payers would have been of major concern to anyone outside the village. Rather, I strongly suspect that the matter of who actually paid the tribute, and what they got in return for doing so, would have become a field of political negotiations

and potential conflict within villages. That is, in circumstances like those in mid-seventeenth-century colonial Andean communities, characterized as they were by increasing economic stratification, wealthy villagers might well have seen it to be in their long-term interest to pay higher amounts of tribute, thereby leaving poorer villagers to pay less, or nothing, but in the process positioning themselves as being indebted to the wealthier tributaries. This would present wealthy *comuneros* with a clear and effective route to gaining prestige and power. If such were the case, we would expect to see evidence that some people were paying a lot of tribute, while others were paying little, or nothing. Most critically for my argument, however, this difference would have been recorded only in the local records, since (once again) the matter would have been of little or no interest to the Spaniards.

The possibility that these kinds of arrangements occurred has come into view because of the discovery of an official Spanish record of tribute (i.e., the Corongo revisit document) juxtaposed with a local, *kipu*-based report of that same tribute. The former records the "ideal" (i.e., equality and fairness in the distribution of the tribute obligation); the latter records the on-the-ground reality of who actually paid what. This would account for what is the recorded/knotted amount of specie actually paid per tributary (i.e., position no. 1 in the *kipu* six cord groups), which varied between 0 and 13 pesos while some villagers were paying as much as 13 pesos, others were paying nothing; the latter were thereby becoming indebted, and therefore likely politically subordinate, to the former.

Is there any evidence in colonial tribute records that this hypothetical situation actually occurred in some Andean communities? In a survey of a wide range of colonial tribute documents, there is little testimony to this effect. In tribute accounts from around Lake Titicaca, such as the *Visita de Chucuito* by Garci Diez de San Miguel, in 1567,¹⁸ unequal demands were made of different populations or ethnic groups. The Aymaras—*indios ricos* ("rich Indians")—paid in livestock (*ganado* = camelids), whereas the Uro *pescadores* . . . *pobres* ("poor . . . fishermen") paid in fish. Catherine Julien studied a set of documents from this region and found the same division and inequality in tribute between these two groups: "In the Lake Titicaca region, two tribute classes were identified. Aymara and Uru. Tributaries classified as Aymara were assessed at nearly double what those classified as Uru paid, and there was no overlap between the two tribute classes."¹⁹

Here, the basic division was not just one of the differences in special-

ization (herders as opposed to fisherfolk), but one of a wealthy ethnic group as opposed to a poorer one—that is, it is a matter of class. This is different from a circumstance, as in San Pedro de Corongo, in which an explicitly standardized demand was made on all tribute-payers in the written documentation but in which the cord evidence suggests there was a negotiation of that sum among tribute-payers at the local level. The nearest written testimony I have found to such a circumstance is in a sixteenth-century document pertaining to the “Tasa del Repartimiento de Pairja.”

The document in question was produced following the visita of Viceroy Toledo, in 1570–1577.²⁰ Pairja was a repartimiento (taxation district), composed of some fifteen hundred tribute-paying individuals who were constituted as a multiethnic mix of Cochas, Pairjas, Chinchaisuyos, and Antas Orejones peoples. These peoples belonged to an *encomienda* that had been granted to Diego Gavilán, which was located on the outskirts of Guamanga (modern day Ayacucho), in the south central Peruvian highlands. The tribute assessment of the repartimiento of Pairja was set at 1,696 pesos, 2 tomines, and 8 granos. The individual peso assessment was set at 4+ pesos per tributary (the exact amount is uncertain, as the document contains a tear in the page at this point)²¹ In discussing the distribution of the assessed tribute among the tribute payers, the document details the terms of the actual payment of tribute within the repartimiento:

But I have clearly had to differentiate among them [i.e., the tribute payments] in general, not equalize them, so that the repartition of the majority of the said tribute as noted helps those who have more rather than those who have less [,] the aforementioned pay more tribute and the remainder is divided and paid in equal parts by the remaining Indians, who have fewer goods. If to the *caciques* and other Indians and to the Corregidor it does not seem that there is sufficient cause for one not to pay more than another, but all equally, measuring well, which would not cause unequal payment so that the rich disperse [squander] their fortunes/wealth and the poor remain rich because they do not pay their tribute, because in regard to this remittance to the said Corregidor, in spite of seeming to the said *caciques* of this repartition it is done in the way that best accords and should be to the said Indians in as much as they do not understand that as for all the others it is necessary to charge the rich more and to relieve the poor, it will not add up to more than the amount of the sum of this

tribute and said repartition being made[;] and this decree [is] being made public so all of the Indians understand they must pay the tribute, and let it be made known to every one of those said parcialidades and ayllus that they do not have to pay more tribute, and that all else that they earn and acquire shall remain theirs.²²

The differentiation of payments among tribute-payers in the repartimiento of Pairija may reflect what took place to produce the range of differences in the payment of tribute among the Recuay Indians in San Pedro de Corongo recorded in the six *kipus*. Again, I suspect that the only circumstance in which we may be able to see this kind of negotiation taking place is one in which we have the extraordinarily good fortune of encountering a *kipu* and its written transcription; to date, such a circumstance has been identified only in the seventeenth century village of San Pedro de Corongo, in the Santa valley.

(c) *If the six khipus in the Santa archive do indeed record the census figures referenced in the Recuay/Corongo document, why don't the numbers of six-cord groups in the various khipus match the numbers of tributaries in the six Recuay pachacas/ayllus?*

The data relevant to this question are illustrated in table 12.3, where we see the lack of a coincidence between the numbers of tribute payers in the six *pachacas/ayllus* and the numbers of six-cord groups in the six Santa *kipus*. Is such a presumption (on our part) of fidelity between Spanish records and indigenous accounts warranted? This seems particularly open to question, as I strongly suspect the ayllu affiliation of tribute payers was almost certainly of little concern to Spanish administrative visitors. These individuals—outsiders to the community—would have had very little involvement with or interest in the day-to-day affairs inside Andean villages.

When Spanish census takers elicited the social identities of tribute-payers, why would any local informant—including the *caciques principales*—have cared whether the Spaniards correctly recorded individual identities such as ayllu affiliations? Why should we suppose that villagers, under conditions of domination by outside census-takers, would be interested in divulging their true ayllu affiliations? What would they have gained from such fidelity to social truth? Any anthropologist who has lived in an Andean village today, working to gain the trust and confidence of locals (much less a colonial Spaniard who visited for a mere day or two) will know how difficult it sometimes can be to nail down such matters of personal identification. Surely local authorities in vil-

lages in colonial times both indigenous and Spaniard, would have been primarily—if not only—concerned that the overall population count was correct. It would have been of concern only to indigenous actors that their proper ayllu affiliations were recorded correctly, and that concern would have focused on the recording in *local* (i.e., *kipu*) accounts, not in the Spanish written documents.

Few provincial authorities of Iberian origin understood the intricacies of the ayllu and moiety organizations in Andean villages, much less the specific entity to which each villager belonged.²³ What good would have been served by a *cacique*'s carefully instructing an outside authority in the fine points of local ayllu affiliations, to the point of correcting ayllu/pachaca assignments of commoners in his village recorded in the written documents? What was surely of utmost importance to all authorities was that the final, overall accounting was correct. I suggest that it is highly unlikely that we will find an exact coincidence between *kipus* and written accounts in terms of the fine points of the recording of local identities (e.g., ayllu assignments), rather, I think what would have been of concern to all officials would have been that the two accounts matched on the bottom line of the census accounting—that is, in terms of the *total number* of tributaries that were assessed the designated tribute. How the total amount of tribute was distributed over the local population of tribute-payers, and how it was actually collected, were matters of local concern as determined by local political calculations and struggle.

This explanation may account for why *kipus* and written records may differ on internal details but coincide on the bottom line. If we accept this premise, a tremendously destabilizing element will have been introduced into the study of *kipus*, especially cord accounts produced during colonial times. That is, *kipu* specialists today have (I believe) generally taken as an unspoken article of truth the notion that cord accounts produced and maintained in colonial communities should match the written documents of which they (i.e., the *kipus*) were the cord equivalents, or copies. If I am correct in supposing that cord and written accounts need only match on the bottom line, this undermines future attempts to identify possible pairings of *kipus* and colonial documents on virtually every point, save for the bottom line.

The above conclusion may cause us to reflect on whether or not these same principles would have characterized cord accounts in the Inka state. That is, in preconquest times, would only local cord keepers, and not higher-level state officials, have concerned themselves with the

fine points of local organization, including the details of personal identity? I strongly suspect that in Inka times state-level *kipukamayus* who checked the records of local accountants would have been intimately familiar with the structural positions and categories of identity of people within local organizations of *ayllus/pachacas*, *moieties*, and other social groupings. Regional *kipukamayus* might even have known, or had a strong intuition about, what names would be associated with Hanan (upper) and which with Hunn (lower) groups. The persistence and stability of certain identities in relation to certain structural categories between local, regional, and even imperial recordings is suggested, for instance, by the structural similarities between the local Atarco *kipu* discussed in chapter 3 and the pair of “imperial” *ceque* *kipus* analyzed in chapter 8. In sum, we should probably expect to find closely matching values between local and state records not only on the bottom line, but also in terms of the details of local social and structural affiliations.

(d) And finally, if the Santa *kipu* archive is, in fact, the knot registry of the identities recorded in the Recuay/Corongo document, how do the 133 six cord groups in the six *kipus* record, or sign, the names of the 131/2 tributaries recorded in the document?

This is, essentially, a question of decipherment. Can we determine how the identities of the tributaries in the Santa *pachacas/ayllus* were signed/signified in the *kipus*? Can we learn how to “read” the 131 names listed in the *padrón* of the Recuay/Corongo document in the Santa *kipus* and match them to 133 sign units in the six *kipus*? This would be, of course, the most exciting breakthrough in the identification of a *kipu*/document match. While I have not made much headway on this challenge, there are a few potential avenues of investigation.

The study of the six-cord groups of the Santa River *kipu* archive has revealed information relating to the cords (material, spin/ply direction; attachment to primary cord [verso/recto; see above, chapter 8]), knots (numerical valuation; directionality [S-knots vs. Z-knots]), and color. There is very little directional variability across the six *kipus* in terms of spin/ply, attachment, or knotting. Therefore, I believe we can set these small differences aside for the time being. Color, however, is a different matter, as there is tremendous variability and apparent patterning in color, beginning with what I have termed “color banding,” which is the basis of the six-cord grouping organization of these samples. Beyond this observation, I note (as seen in appendix B to this chapter, right-hand column of each *kipu* descriptor set) that the Santa

cords display either solid or mixed colors; by “mixed,” I mean either barber pole (i.e., the twisting together of two differently colored cords) or mottled (a blending of two or more cord colors, producing a speckled appearance).

Did color differences play a critical role in signing the identities of the tributaries listed in the Recuay/Corongo document? (The names are recorded in the *padrón*, see appendix A to this chapter.) The *padrón* lists two types of names, indigenous and Spanish. The latter would most likely pertain to individuals of “mixed” (mestizo) identity. Could these two classes of names have been signed by the difference, for instance, between solid color cords (indigenous individuals) and mixed-color cords (mestizos)? I cannot as yet confirm such a hypothesis; however, the study of such arrangements of values—colors and names—is ongoing.

Conclusion

In this chapter I have described and analyzed what I believe is the first example of a match—a bipartite recording of information—between a set of *kipus* and a written document from the colonial era. The document records tribute information and the cords appear to register the same data. I feel confident that I have identified a certain item of tribute—i.e., the some 367+ pesos recorded in both formats—but I cannot suggest the other tribute information recorded in the *kipus* (and no other tribute items are noted in the document). The document notes that the tribute information should be detailed on *kipus*; however, there is no evidence in the cord accounts that allows us to confirm this order of production of the two accounts. Further study is needed on this matter.

It was perhaps always a self-deceptive conceit to think that the discovery of a “Rosetta *kipu*” would resolve all, or even most, of our many difficulties in studying Andean cord keeping. Virtually no one who studies these devices today imagines that *kipus* constitute a three-dimensional cord version of a “true writing system”—i.e., one in which signs denote the sounds of a language, in the manner of graph-based writing systems. Only if the cord based recording system developed in the Andes were indeed to constitute a true writing system might we hope that a straightforward process of decipherment, leading to reciprocal reading between the two types of records, would be possible. It is much more likely that the “decipherment” of the *kipus* will take the

form of a slowly emerging ability to interpret semasiographic sign notations for repetitive patterns (e.g., those relating to sociopolitical structures, economic production regimes, such as agro/pastoral cycles; etc.); work, ritual, and other routines and cycles, and quantitative data.²⁴ Nonetheless, one might have hoped that this, the earliest step in the "decipherment" process, would not have left us with even more problems and questions than we began with! Perhaps our view of Andean cord keeping will become clearer as we continue to study the Santa Khipus and document, as well as when we succeed in identifying other similar matches.

Appendix A. Names of the Tributaries in the Six Pachacas of Recuayes Indians

Pachaca Namus	Pachaca cuyuchin		
P ^o tici a condor	don ju ^o chuquinaupa	fran ^{co} Asencio	P ^o tomas pullic
lorenso tapia	ju ^o carhuahuanca	Ag ⁿ sebastián	Ju ^o gaspar
fran ^{co} nuñez	Joseph colquimunan	domingo incos	A.onso yaulli fausto
Ju ^o chauca	diego tanta riexi	Nicolas ara	Martin chuquinmac
diego pardaue	A.onso pon luis	Ju ^o huaquin morales	Antonio carhuahuachic
diego xara	Ju ^o Ramos rupay	Joseph campos	Ju ^o francisco
antonio de Roxas	Ju ^o chuquimunan	Ju ^o culquiyanac	Ju ^o de roxas
P ^o artiga	p ^o marcos	domingo ancito	bernabe principe
Ju ^o salvador	diego huaman	Ju ^o bap ^{ta} quispicondor	
Ju ^o de Roxas		fran ^{co} nunahuanca	
fran ^{co} rroxas	Pachaca de Cusca	Ag ⁿ carhuacota	
Andres Yapan		Ju ^o culquiyanac leon	
gabriel chuquimaygo	Ju ^o quispe	Dom ^o culquiyanac leon	
Ju ^o Bap ^{ta} hijo del coxo	domingo quisp	xpoval Tel o leon	
Ju ^o corongo hijo de simon	Joseph rincon	P ^o ju ^o ez	
Ju ^o p ^o haçaña hijo de coxo	A.onso montoya	Felis cochachin	
p ^o Joseph hijo del coxo	Joseph carhuapari	Nicolas Ocxac	
Ju ^o chauca hijo de ju ^o	Ag ⁿ montalbo	Ju ^o ch cho	
chauca	Ju ^o belasques		
		Pachaca de Ucore	
Pachaca de corongo	Pachaca de Guauyan		
don fran ^{co} Ramos	A.ons ^o chucho	Fran ^{co} rro,as	
don M ^g carhuahuanca	Luis pari	xpua tantayari	
marcos carhuayamoc	diego carhuahuachic	marcos Juarez	
Ju ^o tantaruna	P ^o Cochachin	Ju ^o rimaycachin	
Ben to colquixari	Ag ⁿ nunahuanca	Ju ^o de la cruz	
Antonio carhuahuanca	Fran ^{co} Pinedo	jacinto carhuamenta	
Nicolas colquixari	fran ^{co} chuquinaupaico	Ju ^o A.bares	
Ju ^o D ego	fran ^{co} ncos	Domingo chuquimango	
Antonio vgnacio	Ger ^{mo} Vicayauri	Ju ^o rimay cachin	
p ^o huaman	Ag ⁿ Rimanga	A.onso Baltazar	
fran ^{co} pomamango	Ju ^o Toribio	Andres yanac	
fran ^{co} salvador	Ju ^o Alonso	domingo fel pe	
phel pe paucarmango	A.onso huanca	fabian Ramos	
Ju ^o chucimango	Joseph asencio	Ju ^o Antonio	
Ag ⁿ Chuquimango	Pedro huanca	Ju ^o quispe	
nicolas alexandro	Marcos de la cruz	Ju ^{co} xpual	
Joseph Roque	Jacinto Hanampa	fel pe parina	
domingo salvador	Jacinto Co las	domingo garcia	
jacinto salvador	fel pe Santiago	domingo huacha	
pedro pablo	d Nico as liuyacpoma	fran ^{co} chuquicondor	
jacinto de la cruz	Miguel llanqu	fel pe barbudo	
Ju ^o de la cruz	Ju ^o carhuaxambo	P ^o martin	
esteban chuquimango	Diego chuquihuanca	Lorenzo asnabal	
		Bias clemente cruz	

Appendix B: The Six Santa Valley Khipus with Their Six-Cord Groups

UR I.D.	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6	Color
LR 91 (15)	4	3	2	47	5	12	W
	4	2	5	52	12	8	AB
	4	5	5	64	6	8	RB
	4	7	5	70	6	2	AB
	4	9	4	68	2	6	MB·W
	4	13	5	70	6	5	W
	4	14	4	5	65	5	LK·AB
	4	16	2	65	14	7	RB·W
	4	20	5	73	1	6	YB
	0	0	0	0	0	0	AB
	0	0	0	0	0	0	LK·AB
	0	0	0	0	0	0	RB·W
	0	0	0	0	0	0	RL
	0	0	0	0	0	0	W
	0	0	0	0	0	0	YB
	36						
LR 90 (17)	5	15	7	12	4	16	B
	5	22	8	16	16	9	W
	5	28	6	32	9	10	RL
	5	34	5	41	10	16	YB
	5	38	7	41	16	11	RL·W
	5	46	5	67	11	23	KB·W
	5	52	7	78	13	10	W
	0	59	4	85	10	10	RB
	5	28	7	19	11	14	AB·LG
	4	63	10	9	6	5	B KB W+MG W+KB·W+
	5	4	4	82	10	10	MG W
	6	8	6	90	10	12	YB
	6	14	8	10	12	17	RL·W
	6	22	12	13	12	17	W
	6	34	15	15	14	15	AB·W
	6	13	7	116	15	19	MG·AB W
	5	32	7	119	17	19	LG AB
	84						
LR 92 (10)	1	6	0	6	3	1	LG·W
	1	6	1	6	2	0	RL
	1	6	5	2	1	0	AB
	1	6	1	6	3	0	W
	1	6	6	2	0	0	RB
	1	6	2	9	1	3	LG W
	1	7	1	8	0	3	RL
	1	6	0	7	1	1	AB
	1	7	0	9	0	2	W
	1	8	6	2	1	0	RB
	10						

UR I.D.	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6	Color
	1	10	2	23	1	1	RB
	1	3	1	12	1	2	AB
	1	3	1	14	0	1	YB
	1	1	1	10	0	1	W
	1	12	2	25	2	2	RB
	1	2	2	13	0	2	AB
	1	4	1	12	2	3	YB
	1	1	0	9	2	1	W
	1	13	0	26	2	2	RB
	1	4	0	11	2	0	AB
	1	5	0	15	3	0	YB
	48						
LR 89 (34)	4	22	6	60	0	4	GO.AB
	4	3	6	58	4	6	KB:W
	4	25	2	58	5	5	W
	4	22	3	59	5	4	MB
	4	21	4	61	4	4	MB.W
	3	18	2	64	4	2	BG:KB
	5	16	2	66	2	3	GA.W
	4	15	3	63	3	3	AB.W
	4	6	0	55	3	2	MB.W
	3	6	2	16	0	1	GG.AB
	0	0	0	0	0	0	BG.AB
	0	0	0	0	0	0	GL.AB
	1	26	0	50	5	4	YB
	1	24	3	50	4	4	RL
	1	27	4	54	4	4	RB
	1	11	1	41	4	4	W
	1	12	2	35	4	5	LG.AB
	1	14	2	37	5	6	AB.W
	5	16	2	41	6	2	LG.W
	5	11	3	45	2	5	BL.RL
	5	12	3	45	5	10	AB:GG
	5	16	0	50	0	0	AB.W
	0	0	0	0	0	0	LG.AB
	4	4	4	46	6	5	AB
	4	4	0	46	4	10	RB
	4	4	3	45	10	5	MB.W
	4	3	1	52	5	4	AB
	4	1	5	53	3	5	MG.W
	0	5	5	54	5	5	W
	4	10	5	58	5	8	RB
	4	15	6	60	5	2	AB
	4	20	5	71	2	4	AB.GG
	4	20	5	70	2	6	RL
	0	0	0	0	0	0	LG.AB
	101						

<i>UR I.D.</i>	<i>Pos. 1</i>	<i>Pos. 2</i>	<i>Pos. 3</i>	<i>Pos. 4</i>	<i>Pos. 5</i>	<i>Pos. 6</i>	<i>Color</i>
LR 88 (9)	9	47	9	157	10	19	LG,AB
	9	0	14	160	19	18	AB
	9	57	11	176	15	17	YB
	9	40	9	160	15	10	AB:GG
	9	42	10	164	10	15	GG W
	9	44	9	161	14	13	AB
	13	46	8	184	13	10	GG,AB
	13	42	8	162	9	15	W
	0	0	0	0	0	0	BG,MB
	80						
LR 87 (48)	1	1	10	1	1	1	YB+AB
	1	1	11	1	1	1	AB
	1	1	10	1	1	1	W
	1	1	11	1	1	1	AB
	1	0	0	1	1	1	AB+YB
	1	1	1	13	2	1	AB+W
	1	1	2	11	1	2	YB
	1	1	1	11	2	1	AB
	1	0	1	11	1	1	YB+AB
	1	1	1	13	1	7	AB+YB
	1	3	1	11	1	1	RB
	1	1	1	11	1	1	YB
	1	0	0	11	1	1	AB+YB
	1	0	1	13	7	2	AB
	1	2	1	12	1	1	RB
	1	2	1	12	1	1	YB
	1	0	0	5	2	2	AB+YB
	1	0	1	20	2	2	AB+YB
	1	1	1	11	1	0	RB
	1	3	1	11	1	1	YB
	1	0	1	6	2	1	W
	1	1	0	21	1	2	RB
	1	1	2	11	0	1	YB
	1	3	0	11	1	1	MB
	1	0	1	8	1	1	W
	1	3	2	22	2	2	RB
	1	3	1	11	1	1	AB
	1	3	1	11	1	1	YB
	1	1	0	9	1	2	YB
	1	5	4	22	2	2	RB
	1	3	0	12	1	1	AB
	1	3	1	12	1	3	YB
	1	1	0	10	1	0	W
	1	8	2	22	1	1	RB
	1	3	1	12	1	1	AB
	1	3	1	12	3	0	YB
	1	1	0	10	0	1	W
	1	10	2	23	1	1	RB
	1	10	2	23	1	1	RB

UR I.D.	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6	Color
	1	3	1	12	1	2	AB
	1	3	1	14	0	1	YB
	1	1	1	10	0	1	W
	1	12	2	25	2	2	RB
	1	2	2	13	0	2	AB
	1	4	1	12	2	3	YB
	1	1	0	9	2	1	W
	1	13	0	26	2	2	RB
	1	4	0	11	2	0	AB
	1	5	0	15	3	0	YB
	48						
LR 89 (34)	4	22	6	60	0	4	GO.AB
	4	3	6	58	4	6	KB:W
	4	25	2	58	5	5	W
	4	22	3	59	5	4	MB
	4	21	4	61	4	4	MB.W
	3	18	2	64	4	2	BG.KB
	5	16	2	66	2	3	GA.W
	4	15	3	63	3	3	AB.W
	4	6	0	55	3	2	MB.W
	3	6	2	16	0	1	GG.AB
	0	0	0	0	0	0	BG.AB
	0	0	0	0	0	0	GL:AB
	1	26	0	50	5	4	YB
	1	24	3	50	4	4	RL
	1	27	4	54	4	4	RB
	1	11	1	41	4	4	W
	1	12	2	35	4	5	LG:AB
	1	14	2	37	5	6	AB.W
	5	16	2	41	6	2	LG.W
	5	11	3	45	2	5	BL.RL
	5	12	3	45	5	10	AB.GG
	5	16	0	50	0	0	AB.W
	0	0	0	0	0	0	LG:AB
	4	4	4	46	6	5	AB
	4	4	0	46	4	10	RB
	4	4	3	45	10	5	MB.W
	4	3	1	52	5	4	AB
	4	1	5	53	3	5	MG.W
	0	5	5	54	5	5	W
	4	10	5	58	5	8	RB
	4	15	6	60	5	2	AB
	4	20	5	71	2	4	AB.GG
	4	20	5	70	2	6	RL
	0	0	0	0	0	0	LG.AB
	101						
	GT						
	359						

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Structure and History in the Khipus

We have been concerned throughout this study with the relationship between structure and history. This was a topic of great interest in anthropology and history during the latter half of the twentieth century, and continues to be of some interest—though less so—to scholars in these two fields in the present. For in truth, history and anthropology reached a kind of rapprochement by the end of the century and both have moved on to other preoccupations in recent years. Thus, this study pulls us back to the concerns of an earlier time, a fact for which I do not apologize, for we have reengaged with the question of the relationship between these two great topics in twentieth century intellectual history from a decidedly unique perspective. We have looked at the relationship between structure and history from the point of view of a new body of material, one that confronts us with a very different set of problems from earlier times. Here, the issue is not how history and structure have been dissected and understood on the basis of constructions and representations drawn from this or that literate and literary tradition (the nature of the material addressed earlier); rather, we have reengaged with the problem from the perspective of a tradition of record keeping employing three-dimensional knotted cords in a material medium similar to the textile traditions of Andean societies of the past.

In their study of patterns of symmetry in Andean weaving, Franquemont and Franquemont (2004) take issue with a suggestion made by Silverblatt (1987) to the effect that women weavers were “scribes” who recorded, in their textiles, the events of history from a female perspective. The Franquemonts, to the contrary, concluded that “Andean weavers are reproducing the structures of their culture, not their history; they are the reproducers of culture, not scribes.”¹ In this book, which focuses

on basically the same materials (cotton and camelid fibers) and many of the same practices (e.g., spinning, plying, dyeing of cords, knotting, etc.) as those the Franquemonts focused on in their study, I have argued that the Andean actors who manipulated the *kipus* over the decades leading to the Spanish conquest were, in fact, comparable to scribes, knotting into their cord records the history of Tawantinsuyu. However, as I stated in chapter 1, I think the histories they produced took the form of representations of complex structures and that the performance of their historical practice instantiated and replicated those structures not only in the empire itself but in the minds—the *mentalité*—of the *kipukamayus* themselves. Therefore, I think they were reproducing the structures of their culture in their history.

In this final chapter, I consider first what kinds of structures the *kipukamayus* were producing and manipulating in their practice of cord keeping, and second, what kind of history the production of those structures in cords permitted them to record, and which, therefore, is accessible to us today.

The Cord Keepers' Structures

From the recording of local social structure, as in the village of Atarco, on the southern coast of Peru, to the recording of censuses in settlements throughout Tawantinsuyu, some of the same structural principles and operations appear in *kipu* recording. "Pairing" seems to have been an important feature of the syntactical structures and semiotic strategies of semasiographic coding in the *kipus*. This is seen in the intimate connection and juxtapositioning of pendant cords and subsidiaries of the Atarco *kipu*, and in the colors of its two different categories of cords (respectively, light brown and medium brown); in Chachapoyas, in the pairing of pendant cords and loop pendants, and the pairing of (unequal) annual calendars; in the pair of linked, ceque system-like *kipus*, and in the opposition of their V (back)-attached cords and R (front) attached cords; and in the pairs of accounting *kipus* at Inkawasi that alternatively employed one or the other of two arithmetical paradigms in checking sums in the accounting records. As I have suggested throughout, we should consider pairs to be operational units grounded in the general principle of dualism, a—if not the—basic principle of the production of meaning (or of the cord structures that are ascribed meaning) in Inka/Andean societies.

A complementary principle to dualism/pairing in the *kipus* was

that of hierarchy, which, I argue, is central to the values of precedence and subordination that operate within cord semiosis in many contexts, especially in the relations of unmarked and marked categories. This was seen, for example, in the precedence of AB (light brown) as the unmarked category as distinct from MB (medium brown) in Atarco, in the priority of pendant cords over loop pendants; and the first year over the second, in the biennial *kipu* calendar in Chachapoyas. I think that we will see much greater use of unmarked and marked categories when we one day are able to “read” identifying labels in the so-called narrative *kipus*.²

In addition to dualism and hierarchy, we also have encountered several of what I would call “multitermed elements” in *kipu* semiosis. For example, this appears in the three-cord color groupings in the Pachacamac *kipus* and in the “waterfall” *kipu* (i.e., the pair containing the ceque system-like *kipus*), the four-cord color-seriated groupings that make up the Puruchuco accounting hierarchy and the six cord color banding of the Santa valley *kipus*. While we see some fairly stable and fixed differences in cord groupings by both spacing and color, it is difficult at this point in our study of the *kipus* to produce convincing identifications of the cultural and semiotic significance of these differences—given our inability to translate many of these structural arrangements into narrative accounts of the local meanings. Nonetheless, I think these structural elements of cord recording would have constituted powerful paradigms for the construction of meaning in cord accounts. In this sense, they represented critical structural features that not only were manipulated by the cord keepers in their constructions of meanings but also, at the same time, shaped those meanings. In short, there was a reciprocity between shaping and being shaped. The structures of the empire were not created anew with each new cord account; rather, certain arrangements, patterns, or structures were continuously enacted and reproduced in cord construction and manipulation.

These are some of the structural elements—dual/binary, hierarchical, and multitermed—and what I understand to have been their meanings in the semiotics of cord structures in the *kipus*. These are some of the principles according to which the physical and visual components of the cord records were manipulated by *kipukamayusqs* daily in their performance of cord recording and reading. These would have presented powerful models for how the world of social and political relations in Tawantinsuyu were conceived and represented by the cord keepers. That is, they would have been part of the mental apparatus

of the production of meaning by the *kipukamayuks* and, at the same time, they would have constituted the structures that were put in place, and/or were recognized in meaningful ways, by cord keepers from Cuzco to myriad villages throughout the empire.

What Kind of "History" is Khipu History?

The title of this book claims it to be a (not "the") history of Tawantinsuyu, the latter of which would suggest a traditional, A-to-Z account of this last, great empire of pre-Columbian South America. In fact, my desire has long been to produce an overall history of the empire and to do so, for the first time in Inka scholarship, based on "primary sources." By this, of course, I mean a version of Inka history based on information provided by the *kipukamayuks* who had firsthand knowledge about the institutions, structures, and events which constituted Tawantinsuyu and which they themselves recorded in their cord accounts. But even if readers were generous and accepted that my intention had been to write a khipu-based history of the Inka Empire, they would no doubt wonder: What kind of history have I actually produced? After all, I have written nothing here about such individuals and events as the emergence of the first Inka king, Manko Khapak, and his siblings from the cave at Tambo T'oko, or about the Chanka invasion, which was said to have sparked Inka expansion beyond the valley of Cuzco, or of the great conquests of the ninth Inka, Pachakuti Inka Yupanki, throughout the Andes.

Had I used khipu accounts to write an event based, linear, narrative history this book would indeed constitute a monumental contribution to Andean studies. Unfortunately, I cannot claim to have accomplished anything like that kind of history. I am not even certain whether such individual, event-based information is recorded in the khipus, although I strongly suspect that it is, and I have argued strenuously in favor of such a scenario.³ If such a history does exist in the cord records, I suspect that it resides in the type of khipus that I describe as nondecimal, narrative khipus. A full-blown study of those khipus will have to wait until someone cracks the code of the khipu.

Rather than an event based, "great man," European linear type of history, what I have produced is an account in a style of history writing which emerged in France in the early twentieth century, known as *Annales* history. What is *Annales* history, and why do I claim that this book ought to be considered part of that tradition of history writing? I

should note first that by professing to have written an *Annales*-style history I am not claiming to have produced a history at the cutting-edge of historical discourse. *Annales* history is an old style of history writing dating from the 1920s and all but obsolete by the 1990s. So while this is not “new history” (that is something else altogether), I will argue that it is nonetheless a type of history that is remarkably well suited to the kinds of information encoded in the khipus, at least in that large body of samples that contains administrative, statistical, and quantitative data—with a modest amount of narrative connecting tissue holding it all together.

Annales History: Event, Conjuncture, and the *Longue Durée*

The founders of the *Annales* school were the French scholars Marc Bloch and Lucien Febvre. The founding was marked in 1929, by the publication of the first issue of a journal entitled *Annales. Histoire, Sciences Sociales*. In a larger sense, this was the culmination of earlier, long-term trends in French historical and social scientific scholarship going back to the beginning of the twentieth century. Jacques Revel names its seminal text in a work by François Simiand, entitled *La méthode historique appliquée aux sciences sociales* (1903). Simiand argued for placing history at the heart of the social sciences, as well as sounding an early call against positivist, narrative history.⁴ The institutionalization of the *Annales* tradition occurred with Febvre's founding of the Sixth Section of the *École Pratique des Hautes Études*, in Paris, in 1948.⁵ In 1975 this institution became known as the *École des Hautes Études en Sciences Sociales*, the name by which it continues to be known today.⁶

The objectives of *Annales* history were to produce “total histories” not just narratives of politics and great men—as well as to draw from and contribute widely to diverse fields within the social sciences. The guiding notion was that “history is no longer wholly contained in a genealogical construct, in which earlier events explain later ones and must consequently be reconstituted with painstaking attention down to their remotest origins. Indeed, history used to be a form of learning obsessed with origins.”⁷ From its earliest years *Annales* history was antagonistic to traditional linear/narrative histories, the model for which was political history in which the (European) nation-state and its (male) elites were the principal actors and agents of change. In this regard, I note that students of the khipu are well inoculated against the production of narrative histories by virtue of the (otherwise unfortunate) cir-

cumstance that we have not deciphered our narrative cord records and, therefore, we do not have the ability to produce such accounts.

Instead of writing linear and narrative histories, the *Annales* approach “prefers to analyze deeper trends rather than superficial changes, to study collective behavior rather than individual choices, to examine economic and social determinants rather than institutions or governmental decisions. Thus demography, economics, and sociology have taken over a field increasingly deserted by its traditional inhabitants: kings, notables, nations, and the theater of power around which they never ceased to gravitate.”⁸

The scholar who is credited with bringing *Annales* history to its greatest heights was, of course, Fernand Braudel, which he accomplished with his monumental works, *The Mediterranean and the Mediterranean World in the Age of Philip II* (1972 [original French 1949]), and the three-volume study, *Civilization and Capitalism 15th–18th Century* (1981 [original French: 1967–1979]). In the former work, Braudel began with a study of Philip II but ended with a wider treatment of the Mediterranean world in the sixteenth century. Braudel “rejected the influence of the individual on history, and hence much of the significance of political history, in favour of an interpretation based on a consideration of physical and material constraints, one in which the individual was subsumed by the environment.”⁹

As Hufton notes, the *dramatis personae* of Braudel's history of the Mediterranean are “grain and cereal crops, disease, technology and transport, money, housing and clothing”¹⁰—subjects which (except for money) are not altogether alien to the kinds of topics I have dwelt on in this work. As for Braudel's emphasis on the Mediterranean as an actor, this establishes the *Annales* approach to history writing as particularly appropriate for historians and anthropologists working in the Andes. The great Andean setting—figured in the sweep of environments and terrain from the Pacific coastal deserts up to the high Andes and down into the Amazonian tropical forests—has played a significant role in the construction of ethnohistorical and anthropological accounts of Andean civilizations, past and present.

In fact, the term by which the historical approach of some scholars of Andean societies is often disparaged —*lo andino* (the Andean)—carries with it the sense that these scholars have become beguiled by the Andean environment (much as Braudel was beguiled by “the Mediterranean”) and have projected a notion of historical inertia on these

societies, which takes the form of "cultural continuities." According to this caricature, such scholars supposedly imagine that Andean societies are, and have been since long into the distant past, rigid, static, and unchanging. I think this claim, which basically asserts that any anthropologist or ethnohistorian who recognizes and explores the meaning and significance of similarities between past and present societies and cultures in the Andes herself betrays a willful blindness to social and cultural processes of persistence and change. There must be something between Braudel's celebration of the agency of the Mediterranean and the disparaging of Andean (ethno-)historians who similarly see the environmental setting as having agency, though certainly not a determining role, in the histories of the societies that succeeded one another in this harsh, vertical environment.

Braudel's other great contribution to the *Annales* tradition, aside from removing the individual from the limelight of total history and attempting to pull all the social sciences into the purview of history, was to establish a new understanding of the pace, or scale, of historical time. It is here that Andean scholars can draw most fruitfully on the *Annales* school in evaluating the material presented in this book as the subject matter for a history of the Inka Empire.

Braudel developed a temporal construction based on setting aside so-called common time—hours, weeks, years, and centuries—and breaking time into a tripartite scheme composed of three types of time: the *longue durée*, virtually boundless time, extending over many centuries in which human existence stays virtually unchanged (Braudel himself was interested in the *longue durée* from the fifteenth to the end of the eighteenth century in Mediterranean history), the *moyenne durée*, known commonly in English as the "conjuncture," which, in common time, is generally on the order of some fifty years to a century and which often captured the time of a trade cycle or a demographic shift or some other cycle of change; and the *courte durée*, or the "event," which may refer to such phenomena as a good or bad harvest, short industrial slumps, or temporary dislocations, perhaps caused by a war or some such event.¹¹

Braudel's tripartite scheme provided a new temporal organization to the historian's narrative in which the pace or scale at which changes occurred became the central issue. His framework also recognizes a kind of hierarchy of value within the "flow" of history. This entails accepting that some elements of society—its institutions, modes of organization, etc.—are fundamental and change only very slowly, if at all (i.e., the

elements of the *longue durée*, which Braudel associated with structure – the “semistillness” around which everything gravitates),¹² while some historical occurrences were brief, short-lived events of local, immediate significance. Between these extremes transpired the “conjunctures,” longer phases or cycles by which society was transformed via a rhythm that could be charted over perceptible time periods and within measurable cycles. The historian’s challenge was to recognize and take account of all three phase forms, and not, for example (as most historians were wont to do) be seduced by short-term events. As Braudel phrased this challenge, “the problem for anyone tackling the world scene is to define a hierarchy of forces, or currents of particular movements, and then tackle them as an entire constellation. At each moment of this research, one has to distinguish between long-lasting movements and short bursts, the latter detected from the moment they originate, the former over the course of distant time”¹³

The notion of this tripartition of historical time can be an extremely useful background against which to assess the historical significance and the differential hierarchical valuations of the *kipu* data detailed in the previous chapters.

Notes for an *Annales* History of Tawantinsuyu

The *kipu*, at least in its administrative form, recorded quantitative data – statistics. This is the kind of material that any self-respecting *Annales* historian would be pleased to be presented with as the foundation for history writing. I think that Andeanists – at least those of us preoccupied with trying to understand the *kipus*, or to “crack the code” – have for too long bemoaned the lack of historical material. Have we been looking in the wrong place, or have we underrated the information available to us in these marvelous “knotted mops?” If we shift our way of thinking about the information we do have and place it within a paradigm of history writing that is compatible with the available data, we can actually write history.

But for now, at least, I don’t think we will accomplish this kind of *kipu*-based history writing by trying to “intuit” how narrative information might have been recorded on the so-called narrative (nondecimal) *kipus* – for example, by trying to “read back” through the Spanish chronicles to recover narrative-type histories recorded in the *kipus*.¹⁴ Rather, until we actually decipher the *kipus*, we should mine the rich

stores of information available in the administrative *kipus* and work with those data to slowly, painstakingly build up a chronicle of historical details as well as foundational principles from which to begin to construct the edifice of an indigenous history of the Inka Empire

How has this study helped set us on this path? We should look at the kind of hierarchization of values in the recording in *kipus* of different temporal scalar data, from long-term, fundamental concepts and principles to brief, event based actions. These temporal differences may be implied by the information in the *kipus* themselves and/or in the archaeological context of their recovery. The following examples fall neatly within the bounds of time and cyclicity outlined in Braudel's three-part organization of historical time

Longue durée: the use of cords and textile construction techniques as a communication medium, dualism as an organizing principle in time, space, and social structure; color differences to signal hierarchical and categorical differences, as in the division of Atarco cords into AB (light brown)/Hanan (upper) and MB (medium brown)/Hurin (lower moiety), or the tricolor arrangement on the ceque *kipus* that signal the hierarchical sociopolitical categories *collana*, *payan*, and *cayao*.

Conjuncture: the brief life of Inkawasi (a mid-range history filled with many accounting events), (presumed) adjustments over time in the Puruchuco accounting hierarchy; the biennial cycle of labor service alluded to in the *kipu* calendar of Chachapoyas; the century long period between the *visita* of San Pedro Corongo, in the sixteenth century, and the *revisita* of the village, in 1670; the Chachapoya *kipu* possibly showing demographic collapse over about a century.

Event: assembling people in a central plaza and conducting a census (e.g., at Atarco, Moyobamba, Santa valley; and see chapter 10); covering *kipus* with aji, beans, or peanuts and pulling the walls down on top of *kipus* in the corridor at Inkawasi; hiding the deerskin packet filled with *kipus*, marine shells and other ritual objects in the Casa del Kipu, Pachacamac; carving wooden bars to hold *kipus* in which scenes of drinking chicha from keros are depicted; transcribing the contents of the San Pedro de Corongo *revisita* document in *kipus*, and attaching the cords of *kipu* UR53B in the front (R) position while attaching those of UR53C in the back (V) position

All of these events constitute historical information, from the *longue durée* of dualism in Inka social organization to the burial of a *kipu* beneath a pile of black beans at Inkawasi. The events are described by using action verbs—calling, covering, hiding, carving—while the *longue durée* and conjunctural items are most naturally characterized as completed actions. This suggests that the essential importance of the conjunctural and the *longue durée* is to establish the core components of the history of a civilization. This is true not only for the Inkas but for European civilizations.

What may be obvious to some in the relationship among the three scalar historical items, but is often overlooked, is their “nesting” quality. Many “events” transpire within the longer time frame of the conjunctural phases, or cycles, and the multiple events and conjunctural cycles rest inside the great stretch of the *longue durée*. When we see, for instance, two pairs of *kipus* tied together in the Inkawasi archive, the acts of tying these cord accounts together were events—brief historical acts. The consequence of such actions, however, was to establish pairs of related accounts that provide historical information about incoming and stored goods; presumably the goods remained in storage for some time (i.e., the circumstances for a conjunctural cycle, or phase), especially given the excellent conditions for preservation on the southern coast of Peru. And finally, this pairing of accounts manifested the principle of dualism, a long-term, pervasive structural principle in the organization of objects and institutions, as well as semasiographic sign values, in the Inka universe. The deep sedimentation of the dualism principle was produced even in the rapid actions of spinning cords either right or left (S- or Z-spun) and knotting cords with either S- or Z-knots. These construction actions “instantiate” i.e., in brief acts of cord production—the deep historical, gravitational structure of dualism in the bodies of the cord accounts.

Inka history gathered from *kipus*, from the long term to a series of events, is constructed in historical signs, or signs detailing both statistical data and identities (of categories, statuses, etc.). As I discussed in chapter 1 and as we have seen throughout the course of this work, the signs of the events, occurrences, and principles recorded on the *kipus* take the form of semasiographs (meaning signs), rather than of phonographs, or glottographs (sound signs). Although we cannot as yet read the rich narratives recorded on these devices, the signs we have encountered in the quantitative *kipus* are nonetheless intelligible, and they do document events, conjunctures, and long-term trends and prin-

ciples in Inka history. Deciphering these signs will reveal the history of Tawantinsuyu—the beginnings of which I think we have undertaken here.

Final Reflections

As noted earlier, the *Annales* school of history, whose principles and objectives I have tried to emulate in this study, is no longer “de rigueur” among twenty-first-century historians. Rather, history writing today commonly follows the school of “new historiography,” which began to emerge in late *Annales* histories of the 1970s. As Braudel noted regarding this trend near the end of his most productive years, historians continued to be lured by short-term, “momentous” (the term has a particular resonance here) events as opposed to the longer-term processes and qualities of conjunctural and *longue durée* material.

In all logic, this orchestration of conjunctures, by transcending itself, should have led us straight to the *longue durée*. But for a thousand reasons this transcendence has not been the rule, a return to the short term is being accomplished even now before our very eyes . . . The historian is naturally only too willing to act as theatrical producer. How could he be expected to renounce the drama of the short time span, and all the best tricks of a very old trade?¹⁵

New historiography is a discourse as power brand of historiography grounded especially in the works of Michel Foucault and in the particularistic, “thick description” writings of Clifford Geertz.¹⁶ The new historiographies, built around the rhetoric of exceptions and particularities, are far removed from the total histories of the *Annales* school tradition. Adrian Jones has succinctly characterized the new tradition in a fine article, entitled “Word and Deed: Why a Post-Poststructural History Is Needed, and How It Might Look.” “Comparisons were now discouraged. Every case had to be different. And simplicity and clarity were seldom prized. History was now rhetoricized. Sample theory and generalization were abandoned. Typicality was supposedly never again to be a question. History’s truths were to be evoked from and by rhetoric, not from aggregated analyses of social structures.”¹⁷

Jones bemoans the loss of history that seeks the kinds of structures and values evoked in this passage. He does not, however, celebrate or plead for earlier, nineteenth-century European “great man” linear narrative histories. Rather, he explicitly argues for a twenty-first-century

history akin to that of the original *Annales* school, which sought an understanding of historical processes, not to mention historical truths, that could be pulled together from comparative, aggregate studies of large bodies of materials.

Nor, I would argue, must this new (“post-poststructural”) history jettison issues of concern to “new” historians. We must still, for instance, treat questions of discourse and power, but such issues must be phrased in ways that allow for comparison across cases and that permit us to make meaningful statements about structure and power that have concerned peoples (not just academicians) in all societies, past and present. In the case of the *kipus*, for example, we can recognize that the extraordinary functional properties of linked and paired *kipus*—i.e., that they provided the means for accounting surveillance and control—are products of the structural principle of dualism in which everything has its natural (read both “functional” and “structural”) partner.¹⁸ Seen in this light, *kipus* can be understood as a medium for discourses of power, but the mode of “discourse”—at least the aspect accessible to us—is not verbal, nor rhetorical; rather, it is constituted in the regimes of accounting surveillance and control established within *kipu* archives at places like Inkawasi and whose principles are reproduced in daily practices of accounting for actual materials important for life—beans, chili peppers, and a whole world of manufactured objects vital to human cultural and political action.

Jones argues eloquently for the reestablishment of a kind of history that is deeply informed and comparative, and that seeks to construct explanations not only of what happened in the past but why it happened and happened as and when it did, and what can be learned from these observations. In Jones’s words:

The new historiography presents us with the same particularizing challenges which confronted the first generation of *Annales*. We would do well to learn again from their example. Their old social science history excelled in dealing with vital, aggregating questions of scope, tempo, and power. Its fault was its slender sense of what might make a social structure, its materialism. If we could have more studies of actions in the aggregate, not just studies of particular discourses or occurrences—political, social, economic, and cultural in their origin and nature, structural in their design and elaboration—we could test hypotheses drawn from well-rounded studies of the material and the immaterial, the theatres of a particular.¹⁹

I hope that I have produced a nascent written history of the Inka Empire that meets many of the desiderata called for in Jones's call for works that are comparative, large in scope, attentive to questions of power, and deeply informed by copious descriptions of aggregated actions. This might be termed the "new Annales history" of an ancient South American empire—Tawantinsuyu.

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APPENDIX

A Khipu Inventory

<i>Collection name/location</i>	<i>No. reported</i>	<i>No. studied</i>	<i>KDB ID</i>
Europe			
Amerika Museum, Cuijk, Netherlands	1		
British Museum, London, UK	4	1	AS14
Cambridge Museum of Archaeology and Anthropology, Cambridge, UK	1		
Deutsches Museum, Munich, Germany	1		
Ethnografiska Museum, Göteborg, Sweden	21	21	LR113- LR129 (including LR116A&B, LR117A-D)
Ethnografiska Museum, Stockholm, Sweden	1		
Ethnographic Museum, Antwerp, Belgium	1		
Ethnology Museum, Vienna, Austria	1		
Linden Museum, Stuttgart, Germany	1		
Lippisches Landesmuseum, Detmold, Germany	3		
Maman Collection, Israel	4		
Musée du quai Branly, Paris, France	18	16	AS74- AS84, LR188- LR192
Musée d'Ethnographie, Geneva, Switzerland	2	1	AS85
Wereldmuseum (formerly the Museum voor Land- en Volkerkunde), Rotterdam, Netherlands	1	1	AS29
Museum für Völkerkunde, Basel, Switzerland	4	1	AS86
Ethnologisches Museum, Berlin, Germany	320	155	AS97- AS189 (including AS101 parts 1 and 2, AS124 detail 1, AS130A&B, AS162A&B, AS182A&B;) UR193- LR250
Museum für Völkerkunde, Freiburg-im-Breisgau, Germany	1		

<i>Collection name/location</i>	<i>No. reported</i>	<i>No. studied</i>	<i>KDB ID</i>
Europe (continued)			
Museum für Völkerkunde, Hamburg, Germany	2	—	
Museum für Völkerkunde, Leipzig, Germany	10	—	
Museum für Völkerkunde, Dresden, Germany	2		
Museum für Völkerkunde, Munich, Germany	21	17	AS87/N3-96; LR23-LR29, LR57
Museum für Völkerkunde, Vienna, Austria	1	2	AS208, UR83
Náprstkova Muzeum, Prague, Czechoslovakia	1	1	AS211
National Museum, Copenhagen, Denmark	1		
Niedersächsisches Landesmuseum, Hannover, Germany	4	4	AS10-AS13
Pitt Rivers Museum, Oxford, UK	3		
Rijksmuseum voor Volkenkunde, Leiden, Netherlands	3	3	LR56A-C
Tropen Museum, Amsterdam, Netherlands	1		
North America			
American Museum of Natural History, New York, NY	51	12	AS190-AS200, LL001
Beloit College, Beloit, WI	1		
Brooklyn Museum, New York, NY	3	4	AS35A-D
Bryn Mawr College, Bryn Mawr, PA	1		
Carlos Museum, Emory University, Atlanta, GA	4	4	UR30-UR31A-C
Dallas Museum of Art, Dallas, TX	19	19	QU1-QU19
Field Museum of Natural History, Chicago, IL	1	1	AS210
Furman University, Greenville, SC	1		
Gregg Museum of Art and Design, NC State University, Raleigh, NC	1	—	
Haffenreffer Museum, Brown University, Bristol, RI	1		
Harris, Leo J., St. Paul, MN	1	1	AS213
Herrett Center for Arts and Sciences, College of Southern Idaho, Twin Falls, ID	1		
Hood Museum of Art, Dartmouth College, Hanover, NH	3	3	AS214, AS215, AS215F
Joslyn Art Museum, Omaha, NE	1	1	AS212
Krannert Art Museum, University of Illinois, Urbana, IL	1		
Llewellyn, C., Durham, NC	1		
Lowe Museum of Fine Arts, University of Miami, Miami, FL	6	6	UR59, JR134 UR138
Lowie Museum, University of California, Berkeley, CA (aka Phoebe Hearst Museum of Anthropology)	7	7	AS201-AS205, UR32-UR33
Milwaukee Public Museum, Milwaukee, WI	3	—	
Mint Museum, Charlotte, NC	1	—	
Fowler Museum at UCLA, Los Angeles, CA	1	1	AS206
Museum of Science, Buffalo, NY	3	3	AS207A-C

<i>Collection name/location</i>	<i>No. reported</i>	<i>No. studied</i>	<i>KDB ID</i>
North America (continued)			
National Museum, Smithsonian Institution, Washington, DC	1	1	AS34
Newark Museum, Newark, NJ	1		
Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA	15	15	AS30- AS33A- G, LR40- UR44
Peabody Museum of Natural History, Yale University, New Haven, CT	1	1	(?)
Princeton University Museum, Princeton, NJ	1		
Royal Ontario Museum, Toronto, ON, Canada	2	1	AS209
Statens Museum, New York, NY	1		
Textile Museum, Washington, DC	2		
University Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia, PA	14	14	AS15- AS28 (including AS26A&B)
South America			
Acaray, Huaura Valley, Peru	19		
Armatambo, Peru	10		
Banco Central de la Reserva del Perú, Lima, Peru	7	7	LR51, UR52, LR53A- E
Bruning Museum, Lambayeque, Peru	1		
Centro Maitiqui, Leymebamba, Peru	32	22	UR1- LR22
Dauelsberg, P., Arica, Chile	3	3	AS69- AS71
Huaycán, Lurín Valley, Peru	22		
Inkawasi, Proyecto Incahuasi, Cañete, Peru	34	29	UR256- UR280 (some numbers = two khipus)
Las Dunas Hotel, Ica, Peru	2		
Museo Amano, Lima, Peru	4	4	AS48- AS49, UR37- LR38
Museo Bruning, Lambayeque, Peru	1		
Museo de Arqueología Azapa, Arica, Chile	1	1	UR58A&B
Museo Chileno (MCAP), Santiago, Chile	14	9	LR35, UR36, LR84, LR130, LR131A- D, LR132, UR133
Museo de Ica, Ica, Peru	33	33	AS51- AS58, LR139- LR164
Museo "Jilón y Caamaño," Quito, Ecuador	2	2	AS36- AS37
Museo Larco, Lima, Peru	5	5	UR45- UR49
Museo de la Nación, Lima	1		
Museo Nacional de Arqueología, Antropología, e Historia, Lima, Peru	35	12	AS38- AS47, AS51, AS68
Museo Nacional de Arqueología, La Paz, Bolivia	3		

<i>Collection name/location</i>	<i>No. reported</i>	<i>No. studied</i>	<i>KDB ID</i>
South America (continued)			
Museo Oro, Lima, Peru	1	1	LR55
Museo de Pachacamac, Peru	35	32	HP1-HP32
Museo Puruchilco, Ate District, Peru	23	22	LR60-LR82
Museo Temple Radicati, Lima, Peru	28	28	LR85-LR112
Nuñez del Prado, O., Cusco, Peru	11	11	AS59-AS67 (including AS63 and AS63B)
Rancho de San Juan, Ica Valley, Peru	2	2	AS72-AS73
Soldi, A., Lima, Peru	3	3	AS50, UR50, UR54
Tambo Colorado, Peru	4		UR156-UR159
Universidad Nacional La Plata, La Plata, Argentina	2		
Universidad San Martín de Porras, Lima	1	1	UR39
TOTALS	923	544	

Notes

Preface

1 From the information recorded by the early Spanish colonial chroniclers, it appears that the *kipu* keepers were all men, however, the cords themselves could well have been produced by women – especially by the *aqlas*. These were young women who were housed in state-run facilities (*aqllawas*) whose lives were put to service to the state in such tasks as spinning, weaving and preparing food and drink for state-sponsored work parties and festivals (see Silverblatt 1987).

2 I have even argued (Urton 2003) that they were doing this—text production—by means of a communication-coding technology similar to what makes my computer function, in other words, via binary coding, but that is a subject to be taken up later.

Outline of the Book

1 I am especially grateful to Carrie J. Brezine for help with *kipu* studies in Göteborg, Sweden, and in the Museo Temple Radicati, the Museo de Sitio de Puruchuco, and the Museo Regional de Ica in Peru, to Alejandro Rojas for help in Leymebamba, Peru, to Julio Sadaña and Yazmín Gómez C. for help with study of the *Inkawas*, *kipus*, and Mettelise Hansen for assistance in the Ethnologisches Museum, Berlin.

Chapter 1. What Can We Learn about the Inkas from Study of the *Khipus*?

1 See Quilter and Urton 2002 and Urton 2002a.

2 See Urton 2014.

3 It is relevant to note that Purchas (as he stated himself) never traveled more than “200 miles from Thaxted in Essex where [he] was borne” (Rawlinson 1931: xi). He took his travel accounts from narratives recorded in manuscripts left to him by Richard Hakluyt (Helfers 1997, Rawlinson 1931).

4 Quoted in Greenblatt 1991: 10.

5 Greenblatt 1991: 10.

6 Goody and Watt 1968: 27–68, see the critique of Goody and Watt’s arguments in Halverson 1992.

- 7 E.g., see Lévi Strauss 1961: 291 for incisive reflections on the matter of writing and power
- 8 See Bauer 1997 for an excellent overview of earlier works consulted by Cobo.
- 9 E.g., Rowe 1946.
- 10 See Cobo 1979 and 1983.
- 11 Cobo, *History of the Inca Empire* [1653] 1979: 94.
- 12 The exceptions are Calancha [1638] 1974 and Garcilaso de la Vega [1609–1617] 1966, both of whose comments on cord keeping are extremely informative but neither of which significantly advances our understanding beyond what we can arrive at by study of the *quipus* themselves
- 13 Tierney 1997
- 14 See Pärssinen and Kiviharju 2004, 2010.
- 15 Cobo, *History*, 43
- 16 Cobo, *History* 21, my emphasis.
- 17 Bauer and Dearborn 1995, Urton 1981
- 18 Ascher and Ascher 1997, Urton 1997
- 19 See Lechtman 1993
- 20 E.g., see how unfavorably Gelb (1963) and DeFrancis (1989) situate *quipu* record keeping on the worldwide scale of recording systems.
- 21 See Hyland 2003
- 22 Garcilaso de la Vega, *Royal Commentaries of the Incas* [1609] 1966: 823–824
- 23 See Boone and Mignolo 1994, Boone and Urton 2011
- 24 A number of recent studies have documented the persistence of cord keeping into the colonial era (Brokaw 2010, Caratola and Puente Lana 2013) and even down to the present day (Mackey 1970, 1990; Salomon 2004)
- 25 Urton 2003
- 26 As I have reported in a study of the construction features of *quipus* in the American archaeology collections of the Ethnologisches Museum, in Berlin (Urton 1994), *quipu* knots are tied in two different ways to produce either S-knots (in which the dominant axis of the knot runs from upper left to lower right = \) or Z-knots (in which the dominant axis runs from upper right to lower left = /)
- 27 Andrews 1990, Mannheim 1998
- 28 Hyland 2014: 643
- 29 Hyland, Ware, and Clark 2014: 190–191
- 30 Hyland, Ware, and Clark 2014: 189.
- 31 As was argued previously by Salomon (2004) and Urton (2003)
- 32 E.g. see DeFrancis 1989
- 33 See Sampson 1985: 29.
- 34 Hobsbawm 1997: 184
- 35 Hobsbawm 1997: 185.
- 36 de la Vega, *Royal Commentaries*, 195
- 37 See Foucault 2010: 48–49, 116–117
- 38 Goody 1978.
- 39 Lechtman 1993: 244–279.
- 40 Salomon 2004
- 41 Braudel 1980: 31
- 42 Lévi Strauss 1961: 286–297

43. See D'Altroy 2015 and Kolata 2013 on coercive and hegemonic forms of power in Tawantinsuyu.
44. See Mackey et al. 1990.
45. Urton 1997 96–97.
46. de la Vega, *Royal Commentaries*.
47. de la Vega, *Royal Commentaries*, 124–125.
48. Blas Valera, quoted in de la Vega, *Royal Commentaries*, 274–275.
49. E.g. see David Foster Wallace's wonderful and powerful novel *The Pale King*, which makes this point about accountants and accounting culture to stunning effect.
50. See e.g., Hoskin and Macve 1986, Miller 1990, Miller and O'Leary 1987, Stewart 1992.
51. For the place of Foucault's works in the emergence of "New Histories of Accounting," see Stewart 1992.
52. Agustín de Zárate, *Historia del descubrimiento y conquista del Perú* [1555] 1944 28 (author's translation).
53. Fray Martín de Murúa, *Historia general del Perú* [1590] 2001 360 (author's translation).
54. Kathryn Burns (2010) has documented these processes, especially through the work of notaries, in the archive of colonial Cuzco with stunning clarity and insight.
55. Urton and Brezine 2011 319–352.
56. Robson 1992 693.
57. Robson 1992 695, n. 19, my emphasis.
58. Robson 1992 697.
59. Robson 1992 700, emphasis in original.

Chapter 2. A Brief Introduction to Tawantinsuyu—the Inka Empire

1. For that, see D'Altroy 2015, Shimada 2015, and Urton and von Hagen 2015.
2. See Cherkinsky and Urton 2014.
3. E.g., see Brokaw 2010, Pärssinen and Kivijärvi 2004, 2010; Urton 1990.
4. See Urbano 1981, Urton 1990.
5. For studies of Inka myths of origin, especially as taken from *kipu* accounts, see Julien 2000 and Urton 1990.
6. See esp. Covey 2006, Bauer and Covey 2002, Kosiba 2012.
7. Bauer and Covey 2002.
8. See Splitstoser 2014 for the possible source of the Wari tradition itself.
9. See Urton 2014.
10. See Kosiba 2012 on the nature of these processes of transformation in a local setting near Cuzco.
11. See Bauer and Covey 2002, D'Altroy 2015, Shimada 2015.
12. See Arkush 2011.
13. Guilmartin 1991, Restall (2003) deemphasizes the significance of differences in weaponry as an explanation for Spanish success in the conquest, giving equal or greater significance to the introduction of European diseases, disunity among the indigenous populations, and other factors.
14. Julien 1988 257–279.
15. Murúa, *Historia general*, 384–385, Rowe 1958.
16. Bray 2015.
17. Zuidema 1964.

18. I have analyzed this arrangement in Pacariqtambo, the legendary origin place of the Inkas, see Urton 1990
19. Felipe Guaman Poma de Ayala, *El primer nueva corónica y buen gobierno* [1583–1615] 1980
20. Parssinen 1992, Wedin 1965
21. de la Vega, *Royal Commentaries*, 764–765, my emphasis
22. Cobo, *History*, 211–217
23. Murra 1980.
24. Murra 1983.
25. See D'Altroy and Earle 1992, D'Altroy and Hastorf 1984, 2001, and LeVine 1992.
26. See Urton and Chu 2015.
27. de la Vega, *Royal Commentaries*, 270–289, my emphasis
28. E.g., for ancient Sumeria, see Nissen, Damerow, and Englund 1993.
29. See Urton and Brezine 2011.
30. See Conklin 2002.
31. Locke 1923, Pereyra 2001 115–123.
32. See also Urton 1997, 2003
33. Ascher and Ascher 1997 151–152, Urton 2003.
34. See Quilter and Urton 2002, Urton 1998, 2002b.

Chapter 3. Cord Notes for Describing an Inka-Era Village on the Southern Coast of Peru

This chapter includes material revised and expanded from G. Urton, “La administración del estado inca por medio de los quipus,” in *Señores de los Imperios del Sol*, ed. Krzysztof Makowski (Lima: Banco de Crédito, 2010), 105–109.

1. Thanks to Helmut Schindler for his help and kind hospitality during my two-week visit to the Museum für Völkerkunde, Munich, in summer 2004. I also wish to express my profound appreciation to Carrie Brezine, who provided me with the breakdown and initial structural analysis of khipu UR28 during the time she was administrator for the Khipu Database Project. The further interpretation and analysis of that khipu in the form presented in this chapter are my own.

2. The full tabular descriptions for UR28 and the other khipus in this linked set (UR23, UR24, UR27, UR28, UR29, and UR57) may be found on the “Data Tables” page of the Harvard University Khipu Database website (<http://khipukamayuc.fas.harvard.edu/>)

3. See Parssinen 1992 381–389.

4. Turner 1996

5. Murra 1975

6. de la Vega, *Royal Commentaries*, 331.

Chapter 4. The Ancestors’ Calendar

This chapter includes material substantially revised from G. Urton, “A Calendrical and Demographic Tomb Text from Northern Peru,” *Latin American Antiquity* 12, no. 2 (2001): 127–147.

1. Following Lerche (1995), I will observe the following orthographic conventions regarding the spelling of the name of the culture and geographical region under discussion in this article: “Chachapoya” will be used to refer to the people, or the ethnic group, as

well as the pre-Hispanic political unity (probably a chiefdom) and the culture under review here, "Chachapoyas," as the name is spelled on most contemporary maps of the region, will serve as the name of the geographical region within which the pre-Hispanic and early colonial Chachapoya ethnic group and culture were centered.

2. Church and von Hagen 2008

3. See Urton 2001, 2008b.

4. Concerning the condition of the *quipus* upon their discovery, according to Adriana van Hagen (in discussion with the author, 1999), the *quipus* were found scattered among the debris left behind after the site was disturbed and looted. Several *quipus*, which are now stored as individual objects, were found tied together in linked bundles of *quipus*. These groupings were untied by Centro Mallqui staff in what was perceived at the time to be an essential step in cleaning and conserving the *quipus*. In addition, one *quipu*—a (once) magnificent specimen consisting of some 266 dyed cotton pendant strings affixed to a carved wooden stick—was washed in detergent by the wife of the hacendado whose workmen discovered (and plundered) the burial site at Laguna de los Condores. This latter *quipu* is now virtually completely white.

5. See Lerche 1999.

6. Smith and Good 1982: 10–11, 31–33.

7. See Church and von Hagen 2008, and Schjellerup 1997: 70–73.

8. For archaeological studies of Chachapoya and Chachapoya Inka sites in the region of Leymebamba and Laguna de los Condores, see Horkheimer 1958, Langlois 1939–1940; Reichlen and Reichlen 1950; Ruiz Estrada 1970; and Schjellerup 1997.

9. See Doyle 1988; Salomon 1995.

10. Isbell 1997.

11. Doyle 1988: 110.

12. Doyle 1988: 68.

13. Doyle 1988: 61, 117, 135–137.

14. Another archaeological collection of *quipus* for which we have good provenience data and archaeological context comes from the central coastal Peruvian site of Puruchuco (see Mackey 1990). See the discussion of this collection in chapter 5.

15. The current museum accession number at the Centro Mallqui, in Leymebamba, Peru, of the *quipu* I have designated here as *quipu* UR6 is CMA 625/LC1 254. However, in the summer of 1999 this same *quipu* was designated as CMA 1889/LC1 052 in the museum inventory. The museum staff at the Centro Mallqui changed the accession number of *quipu* UR6 between the summers of 1999 and 2000. In designating the *quipus* in this collection with labels beginning UR (= Urton), I am following the convention established by the pioneers of *quipu* documentary studies, Marcia and Robert Ascher (see especially Ascher and Ascher 1978). Each *quipu* studied by the Aschers is designated in their report by an AS (= Ascher) number, thereby indicating to later researchers the source(s) of measurements and observations made on the *quipus* in question.

16. For previous studies of possible calendrical values encoded into *quipus*, see Nordenskiöld 1925a and 1925b, and Zuidema 1989.

17. For general discussions of this aspect of Inka culture, see Duviols 1973; Platt 1986; Urton 1997; and van de Guchte 1996.

18. Cummins 1988: 124.

19. Schjellerup 1997: 46.

20. Lerche 1995: 58–61.

21. Schjellerup 1997: 64.

- 22 See Juhen 1988 and Murra 1982
- 23 See Murra 1982
- 24 Schjellerup 1997 315–316.
- 25 Espinoza Soriano 1967 299.
- 26 Biblioteca Nacional del Perú (Lima) A585, fol. 93r, published in Espinoza Soriano 1967 299.
- 27 Schjellerup 1997 40, 318
- 28 See Remy 1992 72–79 and Urton 1997
- 29 Juan Polo de Ondegardo, *De los errores y supersticiones de los indios, sacados del tratado y averiguación que hizo el Licenciado Polo [1585]* 1916 146–147
- 30 Juan de Matienzo, “Gobierno del Perú” [1567] 1967 55, my emphasis.

Chapter 5. Constructing the Records of the Palace of Puruchuco, Lima Valley

This chapter includes material revised and expanded from G. Urton and C. J. Brezine, “Khipu Accounting in Ancient Peru,” *Science* 309 (2005) 1065–1067, and Urton and Brezine, “Information Control in the Palace of Puruchuco: An Accounting Hierarchy in a Khipu Archive from Coastal Peru,” in *Variations in the Expression of Inka Power*, ed. R. Burger, C. Morris, and R. Matos Mendieta (Washington, DC: Dumbarton Oaks Research Library, 2007), 357–384.

- 1 Jiménez Borja 1973, Villacorta Ostolaza 2004
- 2 Jiménez Borja 1956, 1988.
- 3 Cock and Goycochea Díaz 2004
- 4 Eeckhout 2012 217, Patterson 1983, Shimada 1991
- 5 Bueno Mendoza 1974 1975 179
- 6 Alberto Bueno Mendoza, field notes, Puruchuco site museum, 2004
- 7 Mackey 1970 65–66
- 8 See Urton and Brezine 2005, 2007
- 9 See Urton and Brezine 2005.
- 10 For descriptions of other examples of color seriation, see Radicati 2006 155–264 and Salomon 2004 252–255
- 11 Mackey 1970.
- 12 I often tell my students this difference is like that between the “fuzzy” math of one’s calculations of their income taxes based on one’s own receipts (= level I to II) and the rectified accounts one actually reports to the IRS (= level II to III). Ideally these values would be the same; however, in practice, they often differ

Chapter 6. Accounting for the Oracle

This chapter includes material revised and expanded from G. Urton, *Quipus de Pachacamac* (Lima: Ministerio de Cultura, 2014).

- 1 Shimada 1991.
- 2 See Díaz and Valejo 2004.
- 3 See Díaz 2008
- 4 Eeckhout 2012 217, Patterson 1983, Shimada 1991
- 5 E.g., Bueno Mendoza 1990, Eeckhout 2012, and Pereyra 2006.

- 6 Bueno Mendoza 1990 100
- 7 Pillsbury 1996, for mullu at Pachacamac, see Diaz and Vallejo 2004 297-298.
- 8 Bueno Mendoza 1990 100
- 9 Hernando Pizarro, *A los Señores Oydores de la Audiencia Real de Su Magestad* [1533] 1920 175
10. Bueno Mendoza 1974-1975 173.
- 11 Eeckhout 2012 219.
- 12 Eeckhout 2012 217
- 13 Eeckhout 2004, 2008.
- 14 Eeckhout 2012 218
- 15 Eeckhout 2012 221.
16. For the latter, see Urton 1991
- 17 Urton and Chu 2015.
18. Eeckhout 2012 220.
19. Eeckhout 2012 222
20. See Urton 2005
21. See Urton 2005, 2009a
- 22 See Urton and Brezine 2011
- 23 See Urton 1998.

Chapter 7. The Iconography of Inebriation

- 1 See Urton 1994 see also Loza 1999
- 2 Khipu VA 24370a-b was studied by the Aschers, its identification numbers are AS106 and AS107. It has been restudied by Urton UR1106 and UR1107
- 3 It is possible that the bird was intended to be read as ascending, going straight up; however, it seems more likely to me that it is intended to be read as a bird that is diving, probably into water (i.e., because of the uneven, watery-like surface at the bottom of the frame into which the bird is carved)
4. See Loza 1999:66-67 on the general lack of good provenience information for the Berlin pieces
5. See images of diving boobies, which look remarkably like the image carved into the side of the khipu, in Google search "diving booby (bird)." This bird identification was originally suggested to me by Adriana von Hagen.
- 6 Khipu VA 24371 was studied by the Aschers, as AS124, it was restudied by Urton, as UR1124.
- 7 See Meyerson 1993.
- 8 See Allen 1982
- 9 Khipu VA 16636 was studied by the Aschers, as AS140; it was restudied by Urton, as UR1140.
10. Cummins 2002
- 11 Bray 2003.
- 12 Khipu VA 16635 was studied by the Aschers, as AS136, it was restudied by Urton, as UR1136
- 13 Cobo. *History*, 196-197

Chapter 8. What Did the Ceque Khipus Look Like?

This chapter includes material revised and expanded from G. Urton, "La administración del estado inca por medio de los quipus," in *Señores de los Imperios del Sol*, ed. Krzysztof Makowski (Lima: Banco de Crédito, 2010), 97–101.

1. Bauer 2004, D'Altroy 2015, Zuidema 1990
2. In *Code of the Quipu*, *Databooks* (<https://courses.cit.cornell.edu/quipu/data/as59.pdf>)
- Ascher and Ascher note that Cuzqueño scholar Oscar Nuñez del Prado had eleven khipus in his possession in Cuzco in the 1970s. However, the Aschers state that these were samples that Dorothy Menzel reportedly took to Cuzco and deposited there from her excavations at Quebrada de la Vaca, in Chala, on the southern coast of Peru.
3. See Zuidema 1964, Wachtel 1977, Parssinen 1992
4. E.g., Polo Ondegardo [1571] 1916: 56–57
5. Polo Ondegardo, quoted in Bauer 1997: 287
6. See Bray 2015
7. Zuidema 1977
8. Zuidema 1964
9. Bauer 1998
10. There is a difference of interpretation among scholars over whether the hierarchical order of ceques in both sayus of Hanan Cuzco proceeded clockwise and both of Hurin Cuzco counterclockwise (Zuidema 1964: 9, 51, 1977: 252), or if those in Chinchaysuyu (in Hanan Cuzco) alone proceeded counterclockwise and those of the other three sayus proceeded clockwise (D'Altroy 2015: 269). I have chosen to follow the former, Zuidema's, interpretation in this work. However, the critical point for my interpretation here of the relationship between the possible aspects of khipu recording of the ceque system—without going into the great complexities of the colonial literature pertaining to the ceque system—is that there is a complementary opposition between some ceques whose hierarchy proceeded clockwise and some that proceeded counterclockwise.
11. Bauer 1997
12. Urton 2005
13. See Urton 2003
14. Bauer 1997
15. See Zuidema 1982a and 1982b, and Urton 1990

Chapter 9. Accounting in the King's Storehouse

1. E.g., Larrabure y Unanue 1904, Harth-Terré 1933
2. See Hyslop 1985
3. Cieza de León, quoted in Hyslop 1985: 9
4. Cieza de León, quoted in Hyslop 1985: 11–12, my emphasis
5. D'Altroy and Earle 1992: 182
6. Hyslop 1985: 14
7. See Urton and Chu 2015
8. Hyslop 1985
9. Alejandro Chu, in discussion with the author, 2014
10. Urton and Chu 2015
11. Cobo, *History*, 211

- 12 Cobo, *History*, 221
- 13 Urton 2009a
- 14 See Urton 2009a
- 15 Given difficulties of obtaining absolute dates for Inka samples with AMS (C^{14}) dating techniques, see Cherkinsky and Urton 2014.

Chapter 10. Counting Heads in Tawantinsuyu

This chapter includes material revised and expanded from G. Urton, "Censos registrados en cordeles con 'Amarres': Padrones poblacionales pre Hispánicos y coloniales tempranos en los *kipus* inka," *Revista Andina* 42 (2006): 153–196.

1. Pedro de Cieza de León, *El Señorío de los Incas* [1553] 1967: 62 (author's translation)
2. Fray Martín de Murúa, *Códice Murúa: Historia y genealogía de los reyes incas del Perú del Padre Mercenario Fray Martín de Murúa* (Códice Galvin, [1590] 2004: 204 (author's translation)
3. José de Acosta, *Natural and Moral History of the Indies* [1590] 2002: 349–350.
4. de la Vega, *Royal Commentaries*, 267, 273, 274–275.
5. Cobo, *History*, 194–195.
6. But see Radicati 1979, Julien 1988, Urton 2001, and Urton and Brezine 2005.
7. Murra 1975, Murra 1980: 112, Platt 2002, Urton 1998.
8. Salomon 2004.
9. Julien 1988, Murra 1982.
10. See Parssinen and Kiviharju 2004 and 2010.
11. Vargas Ugarte 1959.
12. See Brokaw 2010.
13. Urton 1998.
14. Cook 1992.
15. Webster's Dictionary, 1978, s.v. "census."
16. In fact, from work on the Harvard Khipu Database, we have determined that the number 1, which is signed in khipu by the figure-8 knot, is the most common value recorded on these devices (C. Brezine, in discussion with the author, 2005).
17. E.g., see Marshack 1991.
18. See Locke 1923, Ascher and Ascher 1997, and Urton 1994 and 2003.
19. E.g., see Cespedes del Castillo 1946, and Guevara Gil and Salomon 1994.
20. Cook 1981, 1992.
21. Martín de la Riva Herrera, *La conquista de los motilones, tabalosos, mayna y jíbaros* [1654] 2003.
22. Loredó [1549] 1958, Murra 1982, Parssinen and Kiviharju 2004.
23. E.g., Cook 1978, Helmer 1955–1956, Loredó [1549] 1958.
24. Málaga Medina 1974, Mumford 2012, Ramírez 1996: 112–120.
25. Guevara Gil and Salomon 1994.
26. Málaga Medina, *Las reducciones*.
27. See the tabular data at: <http://khipukamayuk.fas.harvard.edu/DataTables.html>, see Ascher and Ascher 1978.
28. Thanks to Carrie Brezine, KBD administrator both for the development of the KBD, as well as for producing the graphs from khipu and colonial census data discussed in this paper. Brezine also produced the chi squared goodness-of-fit tests on the comparisons between colonial *visita* and khipu shown in figures 10.2–10.9.

29. Auto de consulta y acuerdo con los capitulares de Moyobamba y prácticos de las provincias de los tabalosos 1654 (Lima Archivo General de Indias (AGI) 57, #19 f.), folios 1r-15v, see also la Riva Herrera 2003.
30. Church 1996, Inge Schjellerup et al. 2001
31. Auto de consulta. fol. 6r
32. For the complete registry, see Riva Herrera 2003 138-143
33. E.g., knot and attachment directional variation, color differences, etc., see Conklin 2002, Urton 1994, 2003

Chapter 11. Accounting for Demographic Collapse?

1. See Church and von Hagen 2008, Kauffmann Doig and Ligabue 2003, Schjellerup 1997, von Hagen 2002b
2. Schjellerup 1997 78.
3. See Guillen 1999, Lerche 1999, von Hagen 2002a and 2002b; von Hagen and Guillen 1998.
4. See Urton 2001, 2003, 2005
5. Urton 2001.
6. Urto 2008
7. Arellano 1999, Ascher and Ascher 1997
8. A. von Hagen, in discussion with the author, 1998
9. See Cook 1992
10. Gibson 1966 63.
11. Schjellerup 1997 78, von Hagen 2002b 246b.
12. Cook 1981 185
13. See Adamska and Michczynski 1996, and Cherkansky and Urton 2014.
14. Thanks to Warren Church for providing me with calibrations of the dates derived from C¹⁴ readings on material from Laguna de los Cóndores.
15. Schjellerup 1997 74-79.
16. See Urton 2001
17. Church 2006 470; de la Vega, *Royal Commentaries*, 478-479.
18. Church 2006 474, Church and von Hagen 2008, von Hagen 2002a 10
19. de la Vega, *Royal Commentaries*, 478-479

Chapter 12. Khipus from a Colonial “Rev sit” to the Santa Valley

1. I thank Dr. Carrie J. Brezine, who helped with the study of the Santa valley khipu archive, housed in the Radicati Temple Museum, in Lima, Peru, in 2005. I also thank Dr. Manuel Burga, then rector of the University of San Marcos, who gave us permission to study the Radicati khipu collection. Thanks also to Luis Felipe Villacorta, who facilitated the research in Lima in 2005. I also thank Pavlo Kononenko, who, as database assistant for the Harvard Khipu Database project, was instrumental in querying the Santa valley khipus, attaining information upon which the results described in this chapter are based. I am also grateful for a research grant from the National Science Foundation in 2011-2012 (BCS 1111489), which made possible the close study of khipus in the Santa valley archive on which this study is based. All data pertaining to the samples discussed here may be found at the KDB website <http://khipukamayuc.fas.harvard.edu/>
2. See Hyland 2014, Mackey 2002, and Salomon 2004

- 3 See Zevallos Quiñones 1991
- 4 See Parssinen 1992, Rostworowski and Remy 1992.
- 5 Zevallos Quiñones 1991 64, my emphasis
- 6 "Los dhos Ynd^{os} recuaies del repartim^o del Apallasca reducidos en el dho pueblo de san pedro de corongo deuen pagar en e. dho tercio de navi^d deste dho año trecientos y sesenta y siete ps quarto R^s y un quartillo" (Zevallos Quiñones 1991 61).
- 7 "Se cobren los d[ic]hos tributos del d[ic]ho tersio de Navidad deste presente año de mil y ss/os y setenta con que antes de empear su cobrança se pregone esta repartición en el d[ic]ho pueblo de San Pedro de corongo en la lengua española. y en la gen[era]l del ynga en dia de fiesta a ora de missa junta la gente de manera que todos lo entiendan, y cada uno sepa lo que deve pagar y lo ponga por *quipu*" (Zevallos Quiñones 1991 64, my emphasis)
- 8 Radicati de Primeglio 2006, see Urton 2006.
- 9 Radicati de Primeglio 1964 106- 107
- 10 Radicati de Primeglio 1964 107
- 11 Locke 1923, see also Ascher and Ascher 1997.
- 12 Since khipus are dense arrays of threads and knots, their full description in the standard recording format is also dense and exceedingly complex (see Urton 2003 165-167). Therefore, it is impractical to reproduce in a study of this nature the full descriptive tables pertaining to the six Santa valley khipus. These data, however, are available online at the KDB website (<http://khipukamayuk.fas.harvard.edu/DataTables.html>)
- 13 See Ascher and Ascher 1978
- 14 E.g., see Cook 1981 49; Rostworowski and Remy 1992 148; but also see Keith 1976: 23, who uses multiplier estimates between 6 and 10.
- 15 E.g., see the tasa of the viceroy Francisco de Toledo, *Tasa de la visita general de Francisco de Toledo* [1582] (1975)
- 16 E.g. see Toledo, *Tasa de la visita general*
- 17 In most cases, there were three keys to the *cajas de comunidad*. As the document studied by Ana Maria Presta notes (1991 257), the three keys were kept by the cacique principal, the corregidor (principal Spanish administrative authority), and the scribe, or "quipocamayoc."
- 18 Garcí Díez de San Miguel, *Visita hecha a la provincia de Chucuito por Garcí Díez de San Miguel en el año 1567* [1567] 1964 53
- 19 Julie 1987 62.
- 20 Presta 1991 237-238
- 21 Presta 1991 245.
- 22 "Pero he tenido por evidente hacer diferencia entre ellos en general s.no igualarlos para que el repartimiento en particular de la gruesa de la dicha tasa se han de hacer como dicho es / ayuden los que más aprovechamientos tuvieron a los que tuvieron menos y a los susodichos se les cargare más tasa y a la que restare se reparta y paguen por iguales partes los demás indios que no tuvieron las dichas comodidades. Si a los dichos caciques y demás indios y al corregidor no le pareciere que hay causas suficientes para que no paguen uno más que otro o todos por iguales partes midiendo bien que no sea causa el pagar con desigualdad que los ricos disipen sus haciendas y los pobres dejen de ser ricos por no pagar su tasa porque respecto de esto remito al dicho Corregidor para que con parecer de los dichos caciques de este repartimiento lo haga en la forma que mejor acordare y estuviere a los dichos indios con tanto que no se entienda que por la demasía que hay se cargue más a los ricos por lo que se ha de descargar a los pobres no venga a sumar

más de lo que suma la gruesa de ésta tasa y hecho el dicho repartimiento lo hagan / publicar de manifiesto que lo entiendan todos los indios que han de pagar la dicha tasa y les advierta a todos y a cada uno de ellos de las dichas parcialidades y aylllos que no han de pagar más tasa y que todo lo que más ganaren y adquiereren ha de ser para ellos mismos" (Presta 1991:255)

23. Outsiders' disregard of the fine points of local organization in Andean communities has been pervasive over the centuries, extending even to the present day (see Urton 1992:235)

24. E.g., see Salomon 2004

Chapter 13. Structure and History in the Khipus

1. Franquemont and Franquemont 2004:179

2. See Urton 2003

3. E.g., Urton 1998

4. Revel 1978:11–12

5. Furet 1983:390

6. I have had the good fortune to be invited to teach short courses on Inka history at the École des Hautes Études on two occasions, thanks to the kind invitations of my colleagues Nathan Wachtel and Gilles Rivière

7. Furet 1983:395

8. Furet 1983:399

9. Hufton 1986:209

10. Hufton 1986:211

11. Hufton 1986:210–211

12. Braudel 1980:33

13. Braudel 1980:34

14. E.g., Julien 2000

15. Braudel 1980:30

16. Jones 2000

17. Jones 2000:531–532

18. See Urton 1997

19. Jones 2000:541

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Index

Page numbers in *italics* indicate illustrations.

- accounting: checks and balances, 121, 165–166, and concordant totals, 236, double-entry (Inkawasi), 167, 169, “fuzziness” in, 97, 164, 222, 270n12, hierarchy for, 82, 85–99, and internal summing, 161–165, “new accounting,” 25–26, 174, and paired values (Chachapoya), 209, and power, 23, 29; store-house vs. state administrative, 110–111
- Annales*, 3–4, 175, 250–254, and Bloch and Febvre, 251, *longue durée* as articulated in, 20, 253–257, and similarity to *kipu* history 251. *See also* event-based history
- anthropology and *lo and no*, 253, and neutrality, 9
- Antisuyu. *See* Tawantinsuyu
- aqllawasi*s, 86, and chicha production, 139
- archaeology: reliability of, 34, and rise of Inka empire, 36
- Archaeology of Knowledge, The* (Foucault), 27–28
- Ascher and Ascher, 47, 189, 269n15, 272n2 (ch. 8), *Mathematics of the Inkas*, 47
- asymmetrical dualism. *See* dualism, asymmetrical
- Atarco, *kipu* of, 53–62, 268n2
- Atawalpa, 3, 36
- ayllus, 5, 39, and ancestor worship, 43–44, 67, and *kipu* encoding, 61, 82, 199, and preconquest Chachapoyas, 215, 216, and tribute labor, 82
- Aymara, and tribute payment, 233
- barber pole. *See* *kipus*, construction of barber pole
- base 10, use of, 37
- binary coding. *See* dualism
- birds, as *kipu* bar decoration, 126, 131, 271n5
- Bloch, Marc. *See* *Annales*
- booby (bird). *See* birds
- Braudel, Fernand, 252–255. *See also* *Annales*
- Bueno Mendoza, Alberto, 87, 106
- C¹⁴ dating, of Chachapoya *kipus*, 212–213
- cacique principal*, 77, 196, 232, and Atarco *kipus*, 199–203
- caja de comunidad*, 232–233, 275n17
- calendar, Inka, and Laguna de los Cóncores *kipus*, 68–74
- Cañete valley, 154, 160
- Casa del Kipu, 106, 108, 110
- census (Inka): and analogous *kipus*, 190–194, of Atarco, 53–54, 199, of Chachapoya (see Chachapoya census *kipu*)

- of), comparing of, to Spanish version, 183, heads of households under, 198, role of *kipus* in, 180, 195, 203, and select demographic trends, 188, of *Tabalosos* (see *Tabalosos*, *padrón* of the), tabulation of, 183–184, taking of 38, 179, 183, 185
- ceque* system, clockwise vs. counterclockwise, 272n10, as connection between Cuzco and provinces, 153, of Cuzco, 143–146, 145, in *kipus*, 146–153
- Chachapoya (people/culture) 76–78, 207–216 *passim*, 268–269n1, census *kipu* of, 207–216, 248, preconquest political organization of, 215–216
- Chachapoyas (region), 77, 182, 185, 207–216 *passim*, 268–269n1, as *kipu* province 192
- checks and balances. *See* accounting checks and balances
- chicha, 44, 125–139
- Chilchos, 66
- Chinchaysuyu. *See* Tawantinsuyu
- chi square analysis, on census *kipus*, 189
- Chu, Alejandro, and excavations at Inkawasi, 111, 156–159
- chullpas, 43, of Laguna de los Cóndores, 64–67, 65
- Cieza de León, Pedro de, on Inka accounting, 179
- "closely matching" *kipus*. *See* *kipus* "matching" and "closely matching"
- coastal Peru, household size across, 188, *kipu* preservation in, 181–182, loss of native population loss in, 182
- Cobo, Bernabé: education of, 7, on *kipus*, 8, on land division, 160; on rationality of natives, 10–11, reliability of, 8
- Collasuyu. *See* Tawantinsuyu
- "conjunction," 207, 254–255. *See also* *Annales*
- Consejo Real, 40
- cord keeper. *See* *kipukamayuc*
- Corongo, San Pedro de, 218
- corvée. *See* *mit'a*
- courte durée, 253
- "cultural continuities." *See* *lo Andino*
- Cuntisuyu. *See* Tawantinsuyu
- Cuzco: as administrative center, 143, 153, *ceque* system of (see *ceque* system), and moieties, 39, 146, mummies in, 43; valley, 36
- decimal administration, 40–42, of Puruchuco, 85, and rebellion, 43
- decorated *kipus*. *See* *kipu* bars
- deerskin packet of Pachacamac 106, 107, 109
- de la Vega, Garcilaso, 11–12, 24–25, 45, 61, *Royal Commentaries of the Inkas*, 11–12
- demographic collapse, causes of, 208–213
- "discourse," 22, 257–258. *See also* Foucault, Michel
- dualism: asymmetrical, 152, and calendrical *kipus*, 73–74, 84, in Cuzco, 146, and *kipu* coding, 14, 248–250, 256, and moiety, 15, 18, 39
- Eeckhout, Peter, Pachacamac studies by, 111
- entrada*, 196
- event-based history, 3, 5, 19, 250–251, 257
- Febvre, Lucien. *See* *Annales*
- "fixed values," 162–164, 170
- Foucault, Michel, 22, 26–28, 257, *The Archaeology of Knowledge*, 27
- Franquemont and Franquemont, 247
- "great man" history. *See* event-based history
- Greenblatt, Stephen, 6–7, *Marvellous Possessions*, 6
- "grid panels," 158–159
- Guaman (Chachapoya cacique principal), 77, 83
- Hanan. *See* dualism
- hats, as Inka social markers, 133
- "hegemony" 38, 86
- hierarchical organization, 60, 146–148, 249

- Hobsbawm, Eric, 17
- household, average size of, 183-184, 188, 231
- Huánuco, 188-189
- Huarco, defeat of, 155, 174
- Hurin. *See* dualism
- Hyland, Sabine, 13-16
- illiteracy. *See* literacy, and colonialism
- Inka, the (ruler), 40-42
- Inka Empire: boundaries of, 35; origin stories of, 36, 267n5; political organization of, 42-45
- Inkawasi: khipu archive of, 154-175 *passim*; as new Cuzco, 155
- internal summing. *See* accounting: and internal summing
- Jones, Adrian, on new historiographies, 257-259
- KDB. *See* Khipu Database
- khipu bars, 125-139 *passim*; as benches, 136-139
- Khipu Database (KDB), census khipus of, 189
- khipukamayuq, 5; and accounting hierarchy, 85-86; of Atarco, 61; as ceque organizer, 144, 152; disclosure of, to Spanish, 10, 35; and performance, 19, 22, 53; of Puruchuco, 99-100; and *re-visita*, 218; and semasiography, 17; and social power, 20-23; and state records, 236-237
- khipus: analogous (*see* census: and analogous khipus); archives of, 27-28, 31, 217-239 *passim*; calendrical, 68-84 *passim*; and census (*see* census); and complexity, 5; content of, 13; decipherment of, as process, 239; and dualism, 14, 151-152, 248; as idolatrous objects, 181; khipu boards, 15; khipu keepers (*see* khipukamayuq); linked, 170, 171; "matching" and "closely matching," 78, 120, 166-167, 170; mathematics of, 47; narrative, 4, 47-49, 250; quantitative, 4, 47; reading of, 47, 223; "Rosetta khipu" (*see* Santa valley); summation of (*see* accounting: hierarchy for)
- khipus, construction of: barber pole, 238; "color banding," 118, 221, 222, 237-238; color "seriation," 94, 118; "horizontal equivalence," 30-31; "intermediary" strings, 68; "introductory segments," 92, 93, 94, 94, 100; and khipu bars, 125-126; and khipu clusters, 115; and knot types, 47; "positional notation," 226 (*see* also positional notation: in Santa khipu archive); primary cord in, 46; recto/verso knots, 150; subsidiary cord in, 46; S/Z knots, 14-15, 266n26; and uniformity, 122
- Killke, and Inka origins, 37
- kuraka, 22, 41, 42. *See* also decimal administration
- Laguna de los Cóndores: dating khipus from, 212-214; discovery of khipus from, 269n4; khipus from, 63-84 *passim*, 207-216
- literacy, and colonialism, 6-7
- Llaqtacocha, 66
- lo andino, 252-253
- Locke, Leland L., 223
- longue durée, 20, 253-257. *See* also *Annales*
- "loop pendants." *See* khipus, construction of: "intermediary" strings
- Lurín valley, 101; accounting in, 111
- mallki, 43, 66-67, 84; and ancestor worship, 43-44; and khipu keeping, 67; of Laguna de los Cóndores, 64-65; of Puruchuco, 87, 89
- Manko Khapak, 36, 250
- markedness, 14; and Atarco khipus, 60
- Marvelous Possessions (Greenblatt), 6
- "matching" khipus. *See* khipus: "matching" and "closely matching"
- Mathematics of the Inkas (Ascher and Ascher), 47
- Matienzo, Juan de, 83
- mentalité, 17
- metallurgy, 19-20
- mit'a, 40, 77; and land division, 44-45

- moiety, 15, 39; and Atarco khipus, 60; and Cuzco ceque khipus, 150–151
- monkeys: and chicha consumption, 128–131; as khipu bar decoration, 128
- mottling, 238. *See also* under khipus, construction of
- moyenne durée*, 253
- mullu*, 110
- “multitermed elements,” 249
- mummies. *See* mallki
- Murúa, Martín de, on Inka census, 179–180
- “new accounting.” *See* accounting: “new accounting”
- “new historiography,” 257–258. *See also* *Annales*
- nondecimal khipus. *See* khipus: narrative numeration, decimal place value. *See* positional notation
- Pacariqtambo, 36, 128
- Pachacamac, 86, 101–122; khipu accounting at, 110, 115, 117; khipu appendix of, 123–124; khipu diversity of, 103–4, 121–122; matching khipus of, 120 (table 6.1); oracle of, 101, 114, 121; and scientific excavation, 106–110; Spanish observations of, 110; structure E8 at, 111–112, 113
- pachaka, 218; Atarco, 59–60
- Pachakuti, 36
- padrón. *See* census: taking of
- Padrón de indios tributarios recuayes*, 218; as linked to Santa khipu archive, 228–239 *passim*
- Padrón general*. *See* Tabalosos, *padrón* of the Pairija. *See* “Tasa del Repartimiento de Pairija,” and tribute negotiation
- Pererya, Hugo, 106
- Pizarro, Hernando, 110
- place identifiers. *See* khipus, construction of: “introductory segments”
- Plaza of Pilgrims, 111
- positional notation: modern examples of, 226; in Santa khipu archive, 223–228, 231
- “postmodern accounting.” *See* accounting
- Purchas, Samuel, 6, 265n3
- Puruchuco, 86–88; palace of, 87, 88
- Qolqawasi, 156–157, 157; and storage of goods, 159
- Qorikancha, 43
- Radicati di Primeglio, Carlos, and Santa khipu archive, 220
- Recuay Indians, 218–239 *passim*; pachacas of, 219
- reducciones*, 77, 187–188, 196
- religion: and ancestor worship, 44, 66–67; and land division, 160
- revisita*, 218–220
- Rimac River, 87
- Rimac valley, 85–87, 98, 111
- Riva Herrera, Martín de la, *entradas* of, 195–196
- Robson, Keith, 30–31
- “Rosetta khipu.” *See* Santa valley: khipu archive of
- Royal Commentaries of the Inkas* (de la Vega), 11–12
- Santa valley: as compared to Pairija tax district, 234–235; khipu archive of, 218–239 *passim*; khipu provenance of, 221; problems with proposed khipu match, 230–238
- Schjellerup, Inge, on Chachapoyas tribute-payers, 211–212
- semasiography, 5, 16–17, 256; and Atarco khipus, 60–61, 248; and census khipus, 203; and khipu construction, 248; and positional notation, 226–227; and Puruchuco khipus, 92–94
- Señorío de Ychsma, 86, 101, 102
- signifiers. *See* semasiography
- Spondylus*, religious significance of, 110
- storehouses: of Inkawasi, 156–160; of Rimac and Lurín valleys, 111; as targeted by Spanish, 156
- structures, history of. *See* event-based history

- structures, *kipus* as. *See* semasiography:
and *kipu* construction
- surveillance, 31–32, 258
- Tabalosos, *padrón* of the, 195–197; as insight into census methods, 198, 203
- tambos, 111–112
- “Tasa del Repartimiento de Pairija,” and tribute negotiation, 234–235
- Tawantinsuyu, 5; and Cuzco, 146; overview of, 33–37
- Toledo, Francisco de, and *reducciones*, 187
- “total histories.” *See* *Annales trago*, 128
- transcription, 217
- tribute, 219–220; modes of, 231–232; and Pairija (*see* “Tasa del Repartimiento de Pairija”); village negotiation of, 232–233. *See also* *mit’a*
- “true writing,” 4–5; and access to past, 6–9; and *kipus*, 16, 238; and mental capacity, 11
- tucuyricuc, 179–180
- “257-series” *kipus*. *See* Chachapoyas: census *kipu* of
- Uhle, Max, 14–15, 101
- unit groupings. *See* census: tabulation of
- ushnu, 36, 156
- Vaca de Castro, Cristóbal, and census-taking, 187
- Valera, Blas, on Inka sophistication, 11
- Viracocha, 36, 44
- visita. *See* census: taking of
- “wakas,” 39; of Cuzco, 143, 145
- Wari, 5, 36–37
- Waskar, 3, 36
- Wayna Khapak, 3
- way station. *See* *tambos*
- yanakuna, and census, 183
- Ychsma. *See* Señorío de Ychsma
- yupana, 23–24
- Zárate, Agustín de, on *kipukamayus*, 27
- Zuidema, R. Tom, 272n10 (ch. 8); on *ceque* system, 145

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